NOVEMBER 1944 50 CENTS PER COPY

## VIATION The Oldst Ofmerican Oferenautical Oflayazine

IN THIS ISSUE

#### TERMINATION AND SOLVENCY

— J. Carlton Ward gives a warkable plan for proper administration of the contract termination law, a plan which will maintain a salvent aircraft industry — and the air power to keep the peace.

#### HOWS AND WHYS OF HELICOPTER DRIVES

—A tharoughgoing engineering discussion of installations and functions of basic transmission units for three types of 'capters, written by one of the foremost expanents of rodary wing alreads.

#### BUZZ-BOMB DETAILS

 Sketches and text by an AVIATION editor, revealing hitherta unpublished details of V-1's design and construction.

#### MARKETING PLANE ACCESSORIES

—A case far the distributar, and what he can do to help the retalier.

#### NEW POSTWAR TRANSPORT

- Curtiss-Wright reveals details of peacetime version of famed Commanda transport. Orsait MANEUVERABILITY

Excellent aileron characteristics, together with many other contributing factors, combine to make the Corsair a highly maneuverable fighter. Its ability to roll fast and easily, even at high speeds, has given the edge to many an FAU pilot.

Superior take-off, climb, altitude, speed, range, fire power, stamina, maneuverability-these make the Corsair an outstanding fighter.

#### CHANCE VOUGHT AIRCRAFT

STRATFORD, CONNECTICUT

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

McGRAW-HILL PUBLISHING CO., INC.





mesagge because we won't to dured over 2,000 shopes and Why? Because you will need better and faster assembly speed

in order to win postwar markets in big volume on any productmetal, wood, or plastics. Designing beoutiful postwar products is only the beginning.

STARTING POSITION

LOCKING POSITION

TINNERMAN PRODUCTS INC. The winners will be those good





cuspeller time reduced costs

and improved the audity of



Folome 43 # Number 17

Breding for Navender Edward B Takes Hemen Spinison Contract Termination-Key to his Pener and Security I. Colin. Fard, Jr. Di Give West he Date . . . And They'll Fox It-Fast Dick D. Meyer The Recommune Fernise of Antistrom Technology, III Controls Flader 113 What's Ahead for the Helicapoer?

Marketing A Place for the Distributor in Austral' Assuming Sales - Arthur S. Dream 192. What Sind of Instruments for the Personal Place - Frederick M. Smith 127

Ariatics Research—Englassing—Production Marenhy Miles Jumph S. Peulov 12: Analysis of Communes Beam Havan Vanable Venues of Spring Sancence Many Council Increases Vilgation

S. Marten Compies

Day A. Deve 166 Annail Con BFD

Annhall Circa ED13 Contrary Fundamental Lang-Sunga Fights James B, Rev. 178

Haw Calculuted Craising Fundamental Lang-Sunga Fights James B, Rev. 178 Purks Plans Service Plan Combines Time Parameter Lawrence

Canada Sata Illy Essan-Approach Philips School - James Maningaes 181 Descripted Communication of New V & Florida Book - Climber S. Birther 190

Renneal L. Headler 200 Side Siles

Nancel Arigina

Aracive Alread Festival Natur

Carl Namer Charles F. McRaphride Jan F. Ashfarka

Bobert F. Segeri Fisheldahis C. M. Edier and F. M. Johallenger, Cleudend A. H. Sortak and F. S. Calek, Debrity C. W. Erwil Chings, A. E. Messer, H. Leger W. B. Dennell, Lin Appales E. W. Perigs - Em Fassalom, Juhn Chinese

M. GAAVILL PRESENCE CO., NO. Performe who M for the basis of the Co. State of the Co. and decides them to Vis. Due to the Co. and decides them. So Vis. Due to the Co. State of the control of the Co. State of the Co.

THE RESERVE AND DESCRIPTION OF RESERVE

militar tolk out. Inc. Mr Was that Annue, her York N.

AND TANK AND REAL PROPERTY AND ADDRESS OF PERSONS IN THE PERSON OF THE P



was to the field of buttle in the sky - due stable held of a rotation morney. Beaut of a Bendry, Scinstilla\* superlative steel and precise engineering for on the expension of sparks to fire the realnes of our fight-

Bendox-Scientilla engineers have contributed notably to the advancement of Arresalt Ignation. Their inven-

SCINTILIA MAGNETO DIVISION

applied to the gurralite of peace.







#### resolved. Term to page 176. ATTATION, November, 1984

Briefing for November

How to come through appropriate termirefers without some backross is a gram by which government out do its

AWATION is anotherist sincered wing design. Jesseph S. Pecker, a Chat Birley our Balcult Editor

Aborett scotters meadestures art finding the belief a contrary market ing problems have as many husbr an Drawn, sales manager of Score Academ Corp., says there's a obser-

And speaking of eccessories, should anython supply the hade energy to-

The vederes transcount pilot, James plots accuracy, jest what to do often the levelable pent-of-op-cours in

And for the other cotrons on trans-



CONMINIO IN PLACEDING SLARE, As bushed plate shoring how Corticol/Vigid CN 125—partner skiller restles of C-66—401 hast as re-dulpted for community service. Other shouldeness and develope also set most 200.

Service Command [now part of ATRCL: how Embre-Rabbe reco Come the end of the war, more and John Bronnun and Rulph Hall, all

meets with a bank and insurance unforwater which note a very definite

#### Down the Years in AVIATION'S Los 26 Wr. Ago 119191 -- Post Office an-Servic-Marchet's U.S. sales

total 185 planes cooling \$1 665,903 in year . Showing opens new plant Limbur builds 180.5 ..... Accord - Zeroche 26 yearsupers . . . Upon, pr Good - places to transport loothal teams triveling 1,550 cm Nerv offers 18 Yr. Age 119292 - National Adv Tour (ECO ex.) countries by 25 of 79 storting planes . . . Columbus. connection. . . . Hears Eighter comes

courses second of \$600 million forced

And else is the exact well-counted

Christed acticle gryng fetal's on

Next min \$5,000,000 for in-Bly Tep universities use 16 Tr. Age 119341 -- Scott and Black Sy ridiaritant Court from Eagland record by 87 be. . . . Hammond another \$500,000 to axiet symfon; continue to formation. . . Capt

gifts new total \$3,000,000. . . . Assay String Chambers, developer of estapolit orders \$5,900,000 olumns and marts. for shottened launchiness, dire



of a name different from the growth of growth of with the specified of conventional algorithms. Indiano. And when the displaced possible and the indianocate and specified non-specified displaced possible and the indianocate in the specified displaced possible and in the first possible and the first possible and in the first poss





AVIATION, November, 1944



#### PIPER "PLANE QUIZ"

- Thinks a simpler the region in your rev
   The segments the Cale to revolutional in the Cale to revolutional incidence.

  Agreement with a second during incidence of inc
- 2. What is the uplace and department on a Prior Cold.

  Street Cold.

  Control in the date on a propriet.

  A Here long date it colds to be been in By a Prior Cold.

  Elements you can be been in the colding of the cold in the

This bear register only its furthermists, Key is with the other that Mire has you this train for small firing instruction. Note, as "Place Day" question you were a







HOW GOODYEAR AIRCRAFT CORPORATION SERVES THE 1. Or construction sub- 2. Or decisions must. 3. Or re-manipulation 4. Or building com-

turers' specifications.

essemblies to messalice for all types of airs parts for quantity pro- plate airplanes and

5. to extending the distribution the selection of any design or engineering problem.

AIRCRAFT INDUSTRY GOODYEAR AIRCRAFT CORPORATION

Pieneary in Engineering Airmetel

compensate. Mighlight of this preduction was development of Goodyner Alternit's on displing process for riset below, presenting erectains and distortion—instring better worksmobile, fewer rajects, faster production. Greeken is helding economics for slates different Army-Nevy types at secrets, including economic Connect fathers and slicking









Ruposets of months of exponence with the Ice-Grip tice show this Goodyear development has lacked the problem of landing the inciviest type warplane on amount

place ice.

As the Ice-Grip can be safely used on concrete runways as well as uce, it's helped tremendously the services engaged in transport plane operation and ferry command work between different climate sones.

Proverful are traction of the Goodyear Ice-Grap is due to thousands of riny, high-tensile steel springs, securely molded into its tough rubber

Not only do these springs but ano the see but with this small, multi-strang conservation there is no danger of the non-skid element being stripped off and hurled through the wings.

The Goodyear Ice-Grip tire is made in various steen for a wale range of types of U. 8, warplanes. It is one of the time-proved Goodyear line for all makes of Luckhaged and carriers one average.



AVIATION, Namedon, 1944



SEING YOUR "MEADACHES" TO HEADQUARTIES Sected by the second of the facer Reveals University to the solution and more than in

Assessed Days, About 16, Only or Lin-Assess St, California SUT WAR BONDS - BUT FOR KEEPS

----



and controller reviewed qualities necessary to keep them community on the job, with maximum

#### you get CORROSION RESISTANCE......

#### Plus these SPECIAL PHYSICALS

with Carpenter Stainless!



Have you considered the marr advantages that can be obtained for your new or redesired academy

you some of the many physicals that are available to you in various Corporate Sounders grades, Bight here may be the answer to giving your postwor products recover selfers, broader sales appeal.

Corporers, as pioneer in the development of soft and ducite Spinless Spin and igregger of Pens-Machining Stainless har stock—but always goods a Screle to do specific jobs. Our experienced representatives can belo was select the Consens.

These Advantages · Tweelesting Peace · Strength and Rioldine

Cell is your nearly Carpenger representative new and take full subservators of his disconsisted States the hear results with Smirden Bert do it roday, for planning sime is resting short.

properties most fully meet your requirements.

Careful laboratory control and exacting inspec-

tion source consistent uniformity, lot after los, in

This service means that when your decience speci-

Ses Camenner Sminless he can secure the special

absolveds by dealers, as well as easiest fabrication

qualities. This all adds up to frater production,

fewer rejects, and lower unit costs for your post-

the Socialess you receive.

war products.

THE CARPENTER STEEL COMPANY, 128 W. BERN ST., READING, PA.



shough the special physical propesties provided by Corpensor Stainless Sarole? On those noises we assessed to show

Spinless grades whose physical

Carpenter STAINLESS STEELS

AVIATION, November, 1944

#### Double Row PN Needle Bearing Gives Greater Stability

#### ESPECIALLY IMPORTANT MANUEL CONTINUES OF

The double new PN Type Tommeron North Bearing his unusual stability as

The double you PN Needle Bearing

the order resistant the couple in the force is resisted by the radial forces

classely desperatured that Needle Beauty engaged arough pallers will mustus palley alignment with menmura fagition



wait for account natter and similar

Needle Bourne emipped metrife policy? see currently available from

say files will be sampled on record

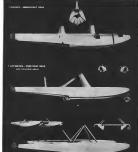
with other advisories of high crowder.

which the double row PN Needle Bear



AVIATION, Number, 1866

#### EDO FLOAT GEAR All-metal seaplane floats for every type of aircraft



#### **Edo Aircraft Corporation**

Contractors to the U.S. Navy and U.S. Army Air Forces and Allied Governments

462 SECOND STREET, COLLEGE POINT, N. Y., U. S. A.

DAL-TWISTON'S GEAS



#### Army's latest Weasel M298 Built by Studebaker and powered by famous Studebaker Champion engine

HIRE'S a beautonew example of the teamwork of the Office of Scientific Research and Developenent, the War Depurement and Soudebaker ensincers . . . It's the letter model of the Army's versatis truck laving vehicle known as the Weard.... it is on sand, mud, awamp or solid ground . . . It not only propels itself to deep water, fully loaded. but it also clambers up and down steep, slippers backs with amusing case . . . This new World eegine . . . It adds another important unit of wer

production to an impressive Studebaker list that dery, meletele, drive Soudebaker military tracks.



Horn's in Wassel dealersed for



often the markons demonstrate are visal over-Parts could iggs from full speed in one direction to full speed in the other. Magnetium open a long way toward reserving that kind of equipment. The speeds willout setting up excessive vilux-Box. Production is greater, quality higher, Die out by Appenden Memerica Cor-

mechine life knows

version, these parts are light, strong and accounts. They are ready to me to unck ofter a minimum of machinese Magnesium is now available to manefecturers of other-than-war products. with W.P.B. acceptal American Maywill cladly charge the availability of macroscopy products with the Alexenter Company of America (Soles Apent for Mailo Magnesium Products) 1713 Gull Building, Pittsburgh 19, Pennystvania

MAGNESIUM MAZLO PRODUCTS

AMERICAN MAGNESIUM CORPORATION

### a Triumph

of Planning

WALTER BORWIN YEAGUE noted industrial designer, in describing Bell Aircraft's advances in aircraft production for the war effort today... for all tomorrow.

Accord b Bington Province Bookers Plant. I have som many supersonse plants but address such perfect coder and such high efficiency on so variation. The success of the such as the such as the success of the such as the such as the success of the such as the such as the success of the such as the such as the success of the success of the such as the based of an invested for section, the success of polycooks to these to keep them the success of the success of the success of polycooks to these to keep them the success of the success of the success of the success of polycooks to these to keep them the success of the su

"All this, then its deceasing on one of perfected techniques, or was a considerable and the second perfected techniques, or was the several perfect that the second techniques and a proceed and the sale and perfect to the second techniques and the second techniques are second techniques and the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques and the second techniques are second to the second techniques are second

PACEMAKER OF AVIATION PROGRESS



capter hower and awarg under perfect coated within reaching distance of the ground, and fluid no firetylanpo. of a get proposition plane. The field

the ground, and I min on newlympe, of a jet proposition plane. The field crewd evidently is an adept at design and what all reality is not at at all fall of natural between the file to such the nearth the street of the second of the terminal the second of the second o

HARARA FRONTIER SIVISION

Figlish and Propose Falls, N. Y.
solves (F.59) and Engades (F.63) — Fight
recents! — Annual Flory for Proposed Flory
Die Ed Thiothia

ORDMANCE DIVISION
Exchangin, 75

Gas Months and other ordnesse me
ORDMOIA DIVISION

Mercila, Ga. 1-28 Bessey injections

AVIATION, Numerica, 160

An ALL-PURPOSE TAP?



..there ain't NO SUCH THING!

type of threading job, requires a particular rap or die built so do the particular job.

Dow't waste time and money experimenting when you meet new

thread-cutting problems. The Grecofield Tap and Die Corporatioo maintaios a complete staff of field men and factory engineers whose accumulated experience in all phases of thread-cutting is readily available to you.



OFFICE OF AND ON CONFORMION - Greenwis, Mass

15

## Reliable Heating..



#### ON THE GROUND...IN FLIGHT... AT EXTREME HIGH ALTITUDES

EPENDABLE performance at high altitudes is one of be oursearding characteristics of Janitrol Aircraft Heaters. The Whirling Flame principle around which all the lanitrol heaters are designed was specifically developed by Surface Combustion gagineers to compensate for rapid changes in air density and temperature at high altitudes.

Janitrol Aircraft Hesters, based on the Whirling Flame principle, are now heating Army. Navy and commercial planes in routine flights in the stratosphere, and at intermediate altitudes. In flight they operate on ram air or with fan. And for service in the coldest climates, these heaters can also be

These "all-altitude" besters are lightweight and compact They require a minimum weight of fuel cubing and dury work. Standard models give capacities ranging from 15,000 to 125,000 B.r.u. per hour output-units with larger capacitics will soon he available.

fan ogsipped for preflight ground hearing.

Surface Combustion engineers are ready to work with you and give you the henefit of their wide experience on the appdication and installation of various types of lanitrol beaters in all types of planes, hours, buses, trucks and other mobile equipment. For complete specification data, write Surface Combustion, Aircraft Heastr Division, Toledo L Obio.











JANGEOL Aloyeth and Perside Servey . JANGEOL Gentless Forced Air and Gravity Farances, Unit Houses and Conversion Barners

end Industrial Con Europe . KATHABAR

NEW YORK - CHICAGO - LOS ANGUES SAN FRANCISCO for commercial, industrial and residential booties a S. C. Industrial

TOMBO, CHIC . COMMENT CHIC Eminacian (VC) or at

#### E-L INCREASES RELIABILITY AND EFFICIENCY OF AIRCRAFT RADIO COMMUNICATION



VIERATOR Power Supplies no empiring accurate converses for a temperature of the a hardy course converses for a temperature of the a hardy course converse for a temperature of the first power for the course of the course of the course of the course of the first power for a temperature of the following the course of the following the course of the cour

the state of the s





AND DISPOSED MOTOR OPERATION . SUBSTREE SALECTROSES AND GROOM EQUIPMENT

Standard in the Aviation Industry
WITTEK
Aviation Hose Clamps



Winds one offers we distinctly different artiture loss charge energiting with the requirements of speciation (ACTE) of the requirement of the production (ACTE) of the representation of the represent

to receive every requirement of the Assistion Industry. Write for new





4265-15 Was 54th Flore, Shonge 22,







CROSS SLIDES

come in connection with the Tu

nembly. He. Lifeth is intended
in mith your present Compo-

Texture Assembly, your present Loque Speece Costage Laber Seece Costage Laber Seece Costage Laber Seece Costage Laboration of succession of costage years of a succession of costage C

With the Loom 6-Position, Self Indenne

OSAN WHITE ANALYSIS

to the flow draw town of the flow of the f

#### A NAME TO REMEMBER WHEN YOU THINK OF EATHES

THIS INTERSTATE UNIT WEIGHING

52 possesses LIFTS A LANDING
GEAR WEIGHING ALMOST & TON



Designed by Douglas built by **Interstate** 

ALECEAST AND EMPIRENCE CORPORATION . IL SECUNDO, CALIFOR

#### Another fluid heat Aircraft Heating Achievement . . .

#### The Lightest 15,000 BTU **Heater on the Market!**

TEHOUGH it delivers 15,000 BTU per sea level to criffing. Automatic compressohour under flight conditions. Finid tion assures high combustion efficiency at Heat's Model SRH-15 Aircroft Heater all air speeds.

weighs only 6 pounds, 14 ounces, complete The same characteristics and outstanding with all controls and accessories. Ideal for lightness feature all models of Fluid Heat's single and two-place simplenes. Blower is conclete line of sixeroft heaters. The exuitable for ground operation. Transfer 100,000 BTU unit, for instance, weight but between ground and flight phase is auto-241/4 pounds. The 50,000 BTU unit weighs matic, assuring continuous service. only 16 nounds, 10 ounces. These weights

include all controls and accessories. Built around a new heating principle of special advantage in sircraft beating, this Fluid Heat has, for sixteen years, led in the super-light heater employs a vapor-entrain- development and manufacture of automatic ing process utilizing pre-heated combustion combustion and heat transfer equipment. sir. The process accomplishes combustion. Those years of heat engineering know-how with an unusually low persume down, per- are built into each light, compact, efficient mitting operation at low ram pressages. It Fluid Heat Aircraft Heater. You will want needness a completely aspeculed fire and. Fluid Heat Aircraft Heaters on planes you therefore gives freedom from lead exide design, build or equip. Write us at the adformation. Flame retention is an positive, draw below for full information on this

that flame characteristics are the some from - major new heating achievement.

FLUID HEAT DIVISION Anchor Post Espre Co. 5740 Eastern Ave. Buildenare 24, Mrd



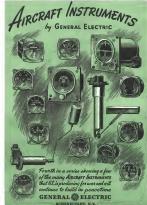


#### ...for Tough manufacturing jobs

industry. both the tim one of mainten met on a home made drop hazoner, foughe far in His tim the sensing year, ... and gave no manuary and Industring during the doubt of general humanest depression before the wear. Lendersh you be abling simplice eithers a govern so of other product wider have whentied by ager, colo, has veal contains in the course set by Solin for body and for the years on earn. Much his less lesswish doubt the design and exponenting of such products. ... show the pacislate descensions of sunders sent and guiter highly without to both any proteints servicing the engineering and profuction of new portrus products of this nature. These we the kind of manufacturing jobs Solar will commune to neek... because they are the county to be Solar house best how on



ATTATION, Normalies, 254 AVIATION, Separate, 254





settle right near on a Lyenesing. on the bonnets of the early gatemebiles, "Personed by Lycoming" understand top match couldty. Today, in the rose of our training places, our actial jeeps, our

recensissance planes - "Powered. of reliability and dependability. And so it will be in the airways of sports olspen, "Powered by Lycoming" sail alongs mean, "You're





1709MW9 MONE 0-435-5, Sa voluping 212 h.p. at 2000 rpes , with cooling for and cooling system Weight 435 lbs.



LYCOMING T ENGINES ... 55-300 H.P.

AVIATION, November, 1986

Making Mountains out of Molehills! There are people who send make mountains of tools and products can see and measure, out of molehills. They are those who must deaccorately and quickly, faults that might test and measure the microscopic irregularities elude other means of inspection.

that would, if undiscovered, swell scrap heaps, Jones & Lamson Optical Comparators are retard production and even endanger lives. made in various models to meet every need.

Jones & Lamson Optical Comparators ex-Ask Jones & Lamson inspection engineers how large minute imperfections to commissions you can use them to expedite and improve size. By the use of the Comparator, immediate inspection in your plant. Ask them today!

#### JONES & LAMSON MACHINE COMPANY Springfield, Vermont U.S.A.

Grinders - Concol Comparators - Retomatio Costing Threading Dies and Chasers.

Jones & Larmon Ontical Comparator being used to inspect the thread of a witel simpless part.





either to workers or their work?

All that are worker ... skilled or westelled, man or voorsa ... has so do to work, and pull the engage. The's all Every American Phillips Scow sets up straight, flesh, and tight, with its head unburred . . and with no gouges on surusing Apperican Phillips Scrows right from the first than the treal them . Because



AMERICAN SCREW COMPANY PROVIDENCE IL BAGON INCANE Chinasa II. 589 E. Winos Street Detroit 2 502 Stephanon Fullding

Put the Screws on the enemy . . . BUT HONDS!



#### Air Power on Parade

Prets and assembles including borisonver's define sests, freelds not mounts.

Pictured are only a few of the sound types pleatic parts for powered pen turrets, AT-21, the complete amplice-oil these Yes, each of us at McDonnoll has a perspeal interest in every one of these planes.

#### M.DONNELL Aircraft Corporation

Manufacturers of PLANES - PARTS - PLASTICS . SAINT LODIS - HIMPHIS .





It make the metalliangural lish at Adhewarch the movement ferrois out the interment secrets of restal. The Modulissecon transfers and records photographically up to 500 to 500 ferrois and the second secretary of the second layer for the second second second second second possession for the second second second second possession fights after





Now mays to plate metal are constantly hong search—ned found—in the Alfrederich resislargual lab. Have a newly-developed plating method for vital Diff calon presentating optimments is fasted—and of the enemy experienments that has belowd improve high altriade products need to were. Chemistry, too, pleys its part by analysing processing methods, finding new materials, see planting, new materials, new plantins, new flushers need developing ways of granding against comparison. By discovering mer sesson for withathead the streams of high speed flight, Adlineauch will contribute to the solid of avesday, a personness plantin selection of a service of a personness plant.

In peace as an error, this metallurgers' inhoratory of Außtenerich will continue to such helps gesternish-besterprosthods for explane construction, as that firing we'll be selfer excited, pleasanter Michaesan's Manufetturing Company, Los Augules and Phonesa



"When Coatralled Air Davis The July "- Augustric Ealt Floy Control Systems " Temperature Control Systems - Separatherps: Africanopulling Systems Engine Air Metersanling Systems " Colon Principle Region Air Metersanling Systems " Colon Principles AIResearch
THE GARRETT CORPORATION

# CARTEULL MANUFACTURED PERFECTLY FINANCE TOUGH- STOCKE





Makers of Time Ball Bearings NATIONAL SEASON OF THE SEASON SEASO

AVIATION, Namember, 2044





PLANNING a postwar program? Weat all the benefits of faces, native seeing with soft, cool G-E faces recent lightness? Or do you

Then remember these two persurent facts: 1. Get the right lamp. Your G-E lamp supplier will be glad to help

... end he knows how to serve your needs hest. 2. Be sure you specify G-E Manis beesps. They give all the ecounters and efferency developed by over 50 years of G-E leadership in house cesearch. They're systle to "stay brighter longer."



THE MAKE G. S. LAMPS STAY BRIGHTER LONGER

G-E MAZDA LAMPS GENERAL @ ELECTRIC

AVIATION, November, 1844

ATLATION, November, 1984



with all other makers of grinding wheat, has adopted a new years of wheel markings. We The new system is one of markings. We The new system is one of marking only 50 wheels why faililler markings by different makers may not grind slike.

This new book gives you a clear understeeding of the new markings on Whorks by Carbonnedon and the guides they indicate. It's also fall of indersension on the proper selection, identification, specification, we and see of mid-affer whorks.

the it does more than the fit institutes additional from formation short the complex Cartivorsedum Risk, the same complete has of shearers made and soil under one heard same. It is one of the more media streamle on shearers were published? To get your copy prompt, by fill out the coupon and smill today to "The Carbonardian Company, Ningers Fells, New York, and Sar July with any Jenstive problem, commit W. Effection was, three new markings will appear as all Grading Wheels seld by Conformation. Because in many of their abords are in an initiative, it may take a lattle whale injury the transition in complete. For as long as it securious publy are continuers, Granding Wheels by Garbermadons will carry both the ald and new markings.

YOU NEED THIS BOOK TO SELECT THE RIGHT GRIND-ING WHEEL FOR THE JOB!

#### CARBORUNDUM PRODUCT FOR EVERY ABRASIVE APPLICATION

ATIATION, November, 1844

IT'S ALL IN THIS NEW BOOK BY CARBORUNOUM!

GRINDING

PACTS



#### 1. The fundamentals of Wheel Marklog

The new Carbonodum Wheel Markings
 Fectors to consider when atlectors to Wheel

A. Cace and Handlang of Grinding Wheels
S. The 9 Standard Wheel Shapes
6, Basic Grinding Wheel Feoretises
7, Types of Grinding Operators
8 Damaed Wheels

9. Green Grit Wheels 10. Moussed Wheels 11. Thread Grinding Wheels 12. Carnag-Off Wheels 12. "NX" Wheels

Wheels I Roses Sticks ad Abrailyts Geoloogs



N. T. Dejir A.

Please used me my free personal copy or
"Gelading Focts."

Colores on a supposed pode such of sed

grandenant by The Carboverhan Coupes

for Tal moster delicing for

Material Control

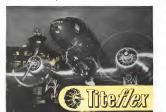
MAIL COUPON TODAY FOR YOUR FREE COPY!

#### To the Airlines of the World

To the operators of commercial axiation equipment throughout the world liteflex makes a peacetime pledge - a pledge for continued vessarch and development in solving your particular problems of electrical shielding of service - both rules and engagement - to our commercial six line course seen - for the time and energy of our personnel will not then be as The Commercial similars of scare will be contained with more new and armitive electronar devoca. Those ... together with higher from each radio shielding of ignition and annihury electrical wirner. Westing research by to promote this efficiency in sizelding. They are now and will be in peace,

available to the see line operator. You my the future of Aviation. Your task in worting has been prodicious. since you have had so much to do, and so little new orresponder with which to do it. With new conjugacent—with an arcentraled postwar public, your future horizons should be limitless. While we have trued to provide specialized service to you even during the war-when Pouce comes, our regiment will go still further in individualised research to solve your specialized problems









WORM-DRIVE HOSE CLAMPS

N FXT month, December, we expect to start production deliveries of Hose Clarge. At first, these will be available only in the most popular time could's deliveries ... The new Series ore irreited and will be accorrect addition, it has inherently greater strength than a clamp made of curbon

secel, and we have also made some for ther design improvements which w the AERO-SEAL Warm-Drive dealers and then offer you the background of

AIRCRAFT STANDARD PARTS CO.

ITIS NINSTSENTH AVE. ECCEPOSO. ILLINOIS

## **USE THIS FILTER**

#### WITH THIS

ADEL'S New Micronic Midget Filter (AN 6101-1) is recommended for installation alone with every ADEL Series "K" Fluid Metering Pursp. This improved filter weighs only 4.8 az., measures only 2" x 2"x 4", vet has a filtering area of 36 square inches, Will remove particles as small as 5 microns, thus offardine complete protection for the anti-iring system. a Schematic drawing shows typical installation of a propeller anti-iding system AN 6100-3 including ADEL Series "K" Fluid Metering Pump (AN 6100-1). ADEL Filter (AN 6101-1) and Rheostat (AN 3155-50-30). While individual units are sold separately for replacement purposes, it is suggested that purchosers of new equipment select the complete kit for atmost artisfaction. Also widely used for notiidea protection of carburetors, windshields, radio mosts and pitot tubes. Pures many light industrial fixids. Veteran of 7 years alabal service under every conceivable condition. Over 100,000 now in use. Write today for descriptive hourburn

NEW ADEL EDUCATIONAL SOUND AND COLOR FELMS a le two parts, each 10 minutes, No. 1, Basic Hydraulies, No. 2. Fluid Flow in Hydraulic Systems. Full color cortoons. Arronne backings with au-Burbank, Calif. Engineering Service Department.





ATLATION, Neverber, 1946

When a short flush of light means the difference between mission completed and utter destruction, E. A. meets the test. For the lives of the crow and the refere of the this depend on whether the correct succession of flashes success threballenus. Friend or fost Godspood or hot lead! It's such accuracy of manufacture that is responsible for E. A. Laborstorier leadership in the many industries it serves.



AVIATION, Morember, 1844

edition VICTORY ... the ADEL-ACE



#### In 10 about years, the name Superior box be-

The present let such recognition over ex-

means ambably the most requised of

her 1504 - to preduce only fine small hele-And what difference does our intensive

We believe it makes it great deal of dif-

\_\_\_\_

#### Doing ONE Job WELL none of their Superips - whether the use

codening pending, or for a newly designed electrical applicance part

Assembly, Superior ellers the design and developmental engineer on opportunity to dames assessed requirements in terms of the mill where encoding "executive taking

p on every-day production stem rew ... the tabang set to be developed Superior in your logical electing peaks ....

by tradition and by experience periods in American industry but taken 45

PENNSYLVANIA









## SINCE PLANES BEGAN TO TALK

The first places is World War I were quotihat death They had no voice. If the paid washed to full the actifity where to see he had to dop a mobility wonder to see he had to dop a mobility wonder to get a feet to the first code see. Then places thought to full, the first crude see with relate were introduced, and Westenphouse electrical units were introduced to supply the

half thousands of these wind-driven, highbroguessy alternates for current. Demanded plane speeds soon made the wind dring of these early solds excession, so Wertinghouse developed a main engine-driven penedert. Power organisms of plenes given elsewity as time went on and budger planeing was solded, to to the load. Generating planes increased, but to the load. Generating planes increased, but



The Last Westinghouse soul-duren, alterators (1517) for elegate operand, with hand-state recording.

is Westerphone scaledores genous This 443-cycl (1527) had adjustable-pitch, speed (1525) was t palaten, meps blade propeller engine durin

1990) was the lint accountal august diver aborneles. AVIATOOM, Nevent



tert genestien jer een with small austhary angine drove.

About this time the Army and Navy began to look to austhary engine-driven pener pleate for heavy heinbere and large petrol craft. To meet this need, Wattanghouse developed a S low quantitus, Suree of these units nee still on either service.

Today, Wastinghouse in brillings a wide rileve of the oughth, electrical quoest and con-

trol equipment for amplanes.

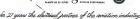
established for this type of equipment.

Design and development work coefficients.
Take one once: among the most important
results of Westanghouse research is the zero
hrush process which solves the peablem of
aspid hrush near at high shiftides.

hrush process which solves the problem of supple from how are it ship shiftedes.

Freject this 27-year record of research and established performance into the future. By contricted a sound reason for making Weelinghouse your working pisture in avisition progress. Weelinghouse Bestim & Marsistotring Company, Small Motte Domiton, 2 O, No. 600, Positorsh 50, 18-18.











Note the trend towards modern streamhand compactness in this later Wartinghouse dynamique (SWH).



OURSELECTION, Nevember,



Make sure you know the difference in cutting oils!



EREEL CHATTING OU CALCULATOR:

UNION OIL COMPANY ALT W. SEVENIN STREET

Andrew Address

Union Od Company manufactures a complete box of outline fixeds Bach of them is a currisity developed formulation based upon extensive research, levestigation and practical expenses in the machining industry. current oil in important. Take private tage of the sid at can give you

ordinary steel mostres a different

cutting fluid than does the same op-

eration on steinloss steel, if you are

It is cheaper to use the covert cat-

ting oil on a piece of work because

nee, fewer tool changes and fewer rejects are the results.

to get the best production.

created by character to a 405 creat cutting oil than the one yet are now using A phone call to your local Union Oil Company representative will place the assistance of Using Oil engineers at your service, or welce

Usson Olf Company, 617 West 7th St. Les Angeles 14, California.

RED LINE CUTTING FLUIDS

Success-Tosted Product

down and all around. The mpt con't turn-There's no road for bulking sing or withers There are countless products that will be soleand lost leaser-specimery that well need less Perhans over home some such neubless more. If mend the overest Electric Stop Nat. Sinews for Worthington "Blue Brutes"

to the part one of our most review difficulties. Our process and all ESNA Electric Street Name for

"appr aparts." Wortenston calls them

end shattering as any found in industry.

Fratesing such equipment to us job for suba the last of socks and otherwa. That's why

national to Charge Consumers, Air

Name 2000 were an old made of Technologic property

AND IN ALL PART AND PRINCIPLE



The large fleet of "AUTOMATIC" TRANSPORTERS . . FORK TRUCKS - - LOW LIFT TRUCKS play an important part in the delivery of THUNDERBOLT FIGHTER-BOMBERS on time to the Army Air Force for final victory

Republic America, Corp., Indicate Dynason, achieves more modulation record and on time delivery of Developed Fashier Sembers only 25 months ofter final ground was broken. A record in itself. Here every readers material handling technique was utilised by using bottery powered mechanical hosding equipment for high ethousesy hersilises in the receiving. to more production lines at clockwork speed. AUTOMATIC is arougl of the doct that its large first of modern A complete case history covering these handing operations

Write taday







43 WEST 22th STREET CHICAGO 25, ILLINOIS





#### Meet Design and Performance Requirements

The motor requirements for the presistion markine and, illustrated at the right, cilled for motion that not cortain performance characteristics and special mechanism regularization.

Holtane-Cabot motor development sugments solved the junthen by designing a speak matter that cortain was all the purchase and designed as peak and matter that cortain was all the speaking and dissistent conditions. . . and today these machine node are speaking as at the other conditions.

prol. of Sciency Lensare of the dependability of the matter.
Whether you built mendem tools to enth agisters, it will pay you to prevention feditive. Cabet-percuit
Bereimal HP matter.

Our empiries will field you prevent with you on your matter.

HOLLTZ
problems for posterse products.

ACTION NOTOES DESIGNED TO 197 THE APPLICATION

HOLTZER-CABOT

Name of the Literal Control

Purpose and Raille and Equal Revision of the Control

Appendix and Raille and Equal Revision of the Control

DEANOR STEEL MISTOR IV, MAIAGOSSITTS \* CRICAGO REMOSI \* MINYTOR, NEW YOR & PREATURE, REMOVEMENT AVELOTION NAMED AND AVELOTION NAMED INC.

Will Will searing last forever?

The search of box, train, plans, twiends, who way and trolley our entires active uns today way and trolley our entires active uns today are upshelved at Nelso.

The, now of these instillations are much trained upward 4D for three hove been worken years—poshably the issuphent to a the haboys of transportations and nacrians.

Yet next one of thous Vefan nexts has also meeded to be recovered, or has shieven the

Valon won't absurb water, won't let the chigggress guesse no footbeld. It results alkalis and south, it is sturies, non-tailmentable And it won't faith.

Hence every color becomes practical. Light, bright effects, color you never dured canader beform! And Velson can be raide in

needed is be recovered, or has shown the slightest sign of seesal. Every single core of those seats can be orneed to an energial finals billibar, colorstance at such y, we wright of these with a 2.8. For completal, undern scatting, use



For the bod, or movie, folion to the Value of Floridore Nicoday systematic over the antike 1990 Helsonik.

Tirestone To A stille MAT of Edd by Firestone

ATTATION, November 1844





#### Standair Fuel Tank Pressure Control Valve

Model FAZ Pressure Certeal Valve is intended for the propose of molinidating possible pressure is situated for the propose of molinidating possible pressure is situated tool systems under all Right contribients, in suchoulant intodate a selective considerate, in the nevent excessive pressure. It generated in the net tools consumerations for vectors release, Weight 1 b., 2 tr. Owned distinctions of W. 2 T. Whre for the Consult distinction of W. 2 T. Whre for the

AVEAUTON, Namedor, 1844



KEEP BACKING THE ATTACK - KEEP BUYING WAR BONDS



The closest attention to detail goes into the manufacture of every HEINEMANN CIRCUIT BREAKER. The use of the finest equipment that can be had, coupled with individual skill and constant supervision, is the secret of their quality.

Send For Catalog Showing Complete Line and Engineering Data HEINEMANN CIRCUIT BREAKER CO.

115 PITTM STREET

Subsidiery of Heinemens Flectic Co. Set 1888. TRENTON, N. J.



Flex-O-Tube

## Phillips \_\_

anth cover-increasing production of combat aviation gasoline, and recently expanded research facilities \_\_\_ confidently promises also postwar flying fuels

Phillips
AVIATION GASOLINE

The same and a line of the



GET THE CONTROL CUTTING SPEED
WITH WALKER-TURNER MACHINE TOOLS!

Theory material—every operation—how in propries prod ... this paped of which mentioning in these such convention, sould whether Timer Monthing. Tools—because of that ecospitatedly wide images of cutting speeds apped, "on the better?" This gives Welkins-Tumer Matchine Tools venerally for handling and materials in all types of operations... of the property of the property of the contraction of the property of the property of the contraction of the property of the property of the contraction of the property of the pro



45° dight or Tall, Medimum dh. Stotes men et check to shids. 1956°, Spendie trevene, 196°. Cloud caseding by "F". METAL - GUTTING BANK SAW - 15° and 16° models Gunnel aprel reducer. Talk the 16° die of the land in the graph grows. Binds faranching die von has speing engless in alterná shocks.
28.18621 BSUL PRISS — Hed or purce final proport final faranching art or fine proportion.

WALKER-TURNER CO., Ize., Pinisfield, N. J.

METAL-CUITING SAND SAWS # POLISHING LATHES \* FEXURE SHAFT MADEN REAL CUILOFF MACHINES FOR METAL \* MOTORS \* BELT & DRIC SURFACE ATTATION, Number, 2044



#### BANTAM AIR COMPRESSOR

The Harrisoff harrison air commerciary receiv the need for a Hean is a buried needs assistance needs to Converting at 2,000



Performance tests from sea level to \$0,000 feet have arrored finishes and processes conform to or racred applicable

Single searce for 779 different controls

AVIATION SUPPLY COMPANY

ATTATION Named 1944

Provides New Vacuum Source

One untilled operator replaces for or

- Breed segment how many tons the Marker gags excessery branchered



... ENTIRELY NEW

TIMES TASTER THAN RING AND PLUG GAGING - ELIMINATING HUMAN FLEMENT IN SETTING DAGE WITH MASTER PLUG AND The ANNUA REVIANT THREAD CLACK should the series

circumference of internal and external threads in a few seconds. The superstar member depos the part on the work met releases the cantral lever, and gives the work a partial turn only. The dial rending shows the accurateted innergraries in lead, taper, pitch diameter, thread form, and the presence of

burrs or surface inaccuracies. The Bryant Thread Gage makes it possible—or never before rately and quickly to the parts being produced—it eliminates tedigus, slow, and expensive methods requiring skilled inspectors. Write today for illustrated folder No. G2 which gives com-

BRYANT CHUCKING GRINDER COMPANY

SPRINGFIELD, VERMONT, U. S. A.



Equipment of Stainless Steel, Nickel and Monel meets many specialized requirements others, a little Nickal goes a long way It prolongs the Irls of processing ap-

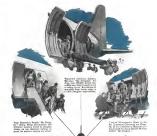
and other correson-resulted allops

For in the chemical industry corre-

are spended watery for and believe and cannot coolers, for high pressure perfectors and perplets, for at the east the







#### They all GO DOUGLAS



March Marches Administration former from the property of the p

AVEATION, Nameshee, 1944



#### **A RECONVERSION** REQUIREMENT...

TMPORTANT in any plan for smooth, speedy reconversion to peacotime production is protection of unused equipment against destructive RUST. Government-owned equipment, according to official specifications, must be rustproofed with minimum delay after "shue-down". And if the equipment is your own, you will Hiervise wish to protect it fully until k is disposed of or put

In either case, you will find Texaro Roottroof Compound and other Texaco rust preventives thoroughly elective - for weeks or years-in protecting coarly machines, precision roots, and other production equipment. These rested in use products meet Government specifications for exterior or interior apolication.

Easily applied with brush or spray sun, Texaco Roothrood Compowed provides a penetratian self-scaling film which is not only waterpeoof but also resistant to chemicals and fumes. It remains photic, healing over any serutches and abrasions. It is tone-baseing

and extremely economical. Texace Rentarged Companied has proved highly successful in protecting all types of parts and equipment from weather and salt water in overseas shipments.

No matter what your rust recoding requirements-exterior or interior-there is a suitable Texaco sustproofing product to men your needs, available to you through more than 2500 Texaco dis-

inhuting points in the 48 States. Order NOW? The Texas Compone, 155 East 62nd Street, New York 17, N. Y.



**Rustproofing Products** 

#### NAME YOUR



#### ... one of the many vital questions on the "BELLANCA AIRCRAFT OUIZ"

AFTER the war, when America Speed is only one of the vital A sertler slown to the business questions regred in our Aircraft of power and "the correct of busciness" in a liberated world, you'll see more sportsmen's sir ruces. And wherever flying people most you'll hear talk of speed! There's a boy difference of opinion about speed. Our Aircraft hundreds of the flying cothusiaste Some believe in "uneed at any urice"-others prefer to corners mise a little on speed for the sake more rouse. How the yest yest?

Bellanca is soiny to build the right speed into the post-war planes. buy. Wait until we've finished our was work all of one was work and you'll see a Bellanca post-way plane that will give private owners will be to the tacts of the majority. But that isn't all. Many other Bellanca features will be in line with neenlandemend, Earmes, landiar cear, rance, scating, construction. capacity and other associal factors

or No, by men and women all over America by many in for distant places, servine with the Anned Forces—who are checking off their encores on this accular Onize Inthis helpful way, you can let us for your nest-war flying. Why don't you seed for this Onia today? Inst rive na year name and address—we'll mail you the Oaks and have you'll movies our report on all returns, so you can compare your answers with

Dent S-3, New Castle, Delayore,

Our are now being voted on. Yes

Keep on Buying U. S. WAR BONDS

**BELLANCA** 





#### Motor-bike built for two



Hare's an oxeditant sourcer to the need of airports for highly-annihile fireextinguishing equipment. Memod by absente-closd freemen and landed with Kridde earbee disastic extinguishers, this motorcycle "conds track," can road right up to crosh free and other blazes and small them out spirkly under a blanket of earlier disastic services.

Kidde extinguishers are being

mounted in many ingenious ways to make their fast fire-killing effect fully available to air fields. They're carried on large emergency trucks, two wheeled

trides, jeeps—even on "scooters,"

If you have a fire protection problem—in the sir or on the ground—the wide experience of Walter Kidde & Computy in this field will be beligful in finding the best solution. Just drop use likely



WALTER KIDDE & COMPANY, INC., 146 DEDAR STREET, NEW YORK 6, N. Y. AYZATION, November, 1944



#### Whitaker workers have the will and the skill to produce wiring assemblies to your specifications Investigate and you will find that

The curls who work in our plants are it. For example, the picture shown above illustrates one of the many complicated assembling being turned out for war needs by our St Joseph plants. The Joh looks difficult, and it would be except for the fact that we have a quarter of a

Whiteker has the "know how" and ample plant facilities to turn out cable arnemblies, wiring harnesses, and flexthis leads for nower and lighting . . Your increision are solicated. Whitaker Cable Corporation, 1301 Burlington Ave., Kansas City 16, Mo. . . St. Joseph.

Mo Philadelphia Oakland WHITAKER Cables, Wiring Recreases and Assemblies for Astometice, Aircraft, Marine and Radio Equipment

#### A Complete Paint Service for Peacetime Aviation

Out of valuable wartime experience, rained in the manufacture of millions of college of finishine materials for allied war-planes, is coming a complete Berry Brothers' postwar point service fee all branches of the aviation industry.

Berry Brothers' aviation finishing materials have enloyed industry-yide leadership for more than 30 years . . . dating back to the First World War . . , and this new and finer postwar acryice will further exemplify this leadership.

Carefully formulated materials will be available for every aviation production and maintenance need, and sales and service facilities will be established to provide convenient distribution.

Commercial sirling managements, fixed have operators and individual plans owners will all be well served by this new Berry Brothers' postwar wistion program.



# RERRY BROTHERS



BERRYLOID

Leading Producers of Aviation Finishing Materials in War and Peace, for over 30 Years

AVEATION, Named et . 2944





Here's Automatic Propeller Perform

Private Plane of Tomorrow



terms, regardless of the degree of back,

No equalor limitational The Spect

No coping! Secure there are no sogs





New Sperry Attitude Gyro provides pattern indication . . . has no angular limits . . . needs no coning!

WITH THE NEW Sperry Altends cell and pitch case of the obplicase. By at any apple with visibility own. The solvened deal is merked to seek sateficed light . . . a single glance tells The suspension for the upbenical dist

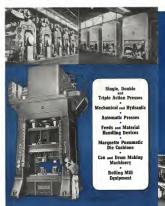
A small give spreng at 23,500 ram stabilizes the sphere and keeps

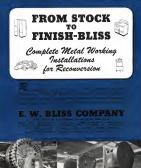
of the new Sperry instrument allows \$41.365° (readon of sadoution in the tours in combat are obvious.

Sperry Gyroscope Company

to be recod ... not even us accounted Gyramapus . Florinaria . Astendia Computation . Some Sectionism AVIATION, Numerico, 1864.









# CHATTERIESS COUNTERSINGS

# GIVE MIRROR FINISH...

a para production stalls for profession planted states, you insight with the foresteen Chatterine Chatterine is a few two ords, for products as faith from the staff by the control, for products a faith from this staff by the control products of faith from the staff by the control of states of parts and parts of the staff by the control of the control o

rinking aroblem.

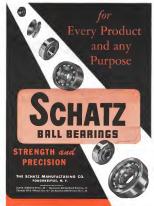


Severation Midget Milling Critism and special certing tools of many types are available, with Severation train directly, for Riskling cercy, that of wood, plasts, mend and olley. These feet working tools take sheep bits, feetwelf ideas shop For best works, notice one cutter and cord war works, notice one cutters and cord war.

ATTATION, Mercahar, 1888.

som extent for regarding to the nearest Severates plant.

MIDDET ANDRED CRITTER \* MECISION EXPRESSION \* EXPERIENCE TOCK INCREMENT FOC, BASENING, MICHAEM \* PLANTS IN LONG SUAND CRIT I, NEW YORK, OFFICET 2, MICHAEM, FORT WATHER ROCKING, CRICADO & LUNCE, AND LOS ANDRES 21, CAMPRING. IN CAMPAIR & FORDS TRESS TO, TOCHATO, CONTENT, CRITTER .



AVIATION, Numerice, 1864



Federal's Instrument Landing System is Ready to Serve the Great New Air Age



Federal's equipment has made a great contribution to safety in the air. It is dependable and, moreover, is less subject to atmospheric discurbances. It reduces initial, maintenance and operating costs.

Federal-one of the largest manufacturers of instrument landing equipment for ground installations-is prepared now to discuss your plans and probable

Federal Telephone and Radio\_Corporation



# combines All these features in ONE Clamp!



- 1. Three sizes cover engine range of smedual how charp ways. (AN7)5-22
- 2. Band will not align-regardless of pressure or torque services. 4. Vibration proof - under all conditions
  - 5. Correlion proteston meets U. 5. Navy corresion resistance requirements 4. Patented swivel-action tax positively locks acrew and cindles band under
  - 7. Conferent to hose contrayr well not peach or dittert the parts.









#### I'wo of Many Ramco Achievements



#### that suggest why it is good business to Check Your Ring Requirements with Ramco

Spire-Seet is illustrative of Romon's engineering appointifies in the field of platter ing dauge. More-Lap, Namen's large-billins in the field of precisive prediction.

Spire-Seed in the lates of a large line of Sarano developments which date book more than heaver were. When these beauty in common date the principles are supported by the principles.

one protection.

Micro-Loop is a Stories development in the field of observed relays which makes possible the pre-depths of degree with delates researced in reducents of two lacks with a high degree of additionally one of a protection cannot come of productions.

Remote pre-death series would be for poor use in monorating the efficiency of demonstrating and with scalar sequences. Showed a supplementary comprehensive to everythink more in times are settlementary and with scalar sequences. Showed a supplementary comprehensive in the second sequences whose power are places of the first two of the story and the story of the second sequences whose power are places of the first two of the story of the second sequences whose power are places of the second sequences whose power are places of the second sequences.





# Looking for the best

# answer to REPRODUCTIONS?

TIMITRES	POSTADBANA METROD		OTHER PROCESSES			
	61.4(8-S/CH) 61.008	0040	А	8	С	D
Confidential	198	YES	1 15	YES	late	YE.
Versatile	YES	YES	HO	NO	NO	NO
Working copies from other processes	YES	TES	NO	NO	NO	No
Inhibit traings from other processes	YES	YES	NO	NO	NO	×
Good infe-like tracings from pencil tracange	YES	YES	) ES	118	NO	YE
Review paper cops from transparent tracings	YES	1 ES	3 85	125	MO	*
Ink-like tracings from ink tracings	1.65	1 E8	NO	YES	128	yΕ
Complete range of sizes	11.5	HO	YES	YES	YES	YΕ
Service and supplies in all large cities	1 83	mg	102	=0		
Expert knowledge in all in- custrial systems and rec-	115	NO	NO	NO	KO	



SHIPS ARD "Flore with increase, STEEL COMPANY-"We're say-

booket it is providing pleaty of



SPEED - VERSATURY - SIMPLICITY - FCONOMY REMINGTON RAND

MODEL 0-12

Vaccoun Sect -- Made in 30" x 40 or 40" x 60" size. For Garanti Office Use. For larger forms or mal. Continuous - Will boards



SETTING NEW STANDARDS IN AIR TRANSPORTATION 00000



# The Lockheed Constellation>

HEREFAGE OF PERMERS - CHARLENGE TO TOMORROW

Sector-Durrout's addistractoryment was one of many Year by year, since the care of the

contain, longer, faint, higher lights set received in the binney of amout? Today, with the preference of the Lotchard Consolitions—usuage are would manufacture in govern, mage, popular, and inter-the progress of flight has exclude a new level. Despite its run, the Constribution on the Parks of and land who that recregar sough, the Consolitions in approximation of the Consolition of the Cons

THE PARTY OF THE P

Greatest rate of clients of any transports: \*\*Langest range of any transport \*\* Bigged lead-carrying capacity of any transport Highest crassing altitude of any transport \*\*Pastest crassing speed of any transport \*\*And then performences wake the Countelleating the softest of any transport.





- Q. Will the Controllation be an 'expensive' plane to opense.

  W. T. Personnel, N. H.
- On the contrary. Conference and on flights from one headerd in short throcased makes a less than that of the reampers on service today.
   Q. In a cross that the Consections a can carry 100 except?
- —Surgi W T St., Fan Ook A. Je so military serves the Contribution non-curry 200 temps and these episperes?
- Q. Why does the Constellation have three stale?

  —Many W., A.

  A. Bog radder recipion are unded to cound by planes, By denoted
- the messary 201 of ft over him equal serfect, plant is made safer and exter to hardle in release; and hargest: O What we the Councillation's discensional —CWT. Owner
- A Wing you 125 ft , way sone 1650 op ft , largeb 35 ft , bayle 23 ft 8 in , from proced in tip of the molder

DEMNIKED

TOR NEW WORLD STANDARDS IN AIR TRANSPORTATION



MILLIONTHS OF AN INCH FOR SALE BY VINCO

Complete details furnished on request.

VINCO COSPORATION, SNS Schooler, Detroit 27, Mich.

BASIS OFFICIAL NEW YORK, EMCADO, CURVIANO

AVIATION, Necessite, 1946

### IMPROVED FORMULATION FOR HEAT-RESISTANT LUCITE

Offers you heat-resistance,



# **MOLDING POWDER**

greater clarity, optical improvement

THIS NEW heat-maintant maiding powder, which is an inscrived formulation, provider heat-resistance 30 to 47° F. higher than articuty sarvile molding powders. It has time readacts, ranging from a lighting guide

tank directional indicator. It is not intended to replace general purpose "Lucite," except it promises to widen the field of use of

a large variety of colors,

MED MEAT-DESISTANCE

HEAT-RESISTANT "LUCITE" is enother example of how Du Pool technicians see helping the plastics industry to produce better mobiled pieces more quickly, at less cost-and how they are beining to supply actual users with inverced materials to meet their broadening re-

WRITE for free bookiet viving communica of optical, mechanical, electrical and molifing recognition of farmed atten HM, 122 and county automate "Lucite." Address: E. I. du Port de Nessous & Co. (Inc.), Plastice Department, Arlington, N. J., or 5801 S. Broadway, Los Angeles 3,



DU PONT PLASTICS

AVIATION, November, 1966.



Paragraph D-6g of Navy Process Specification SR-70d, Amendment 4 makes rat-practing of Naval Aircraft fabric mandatory

IHIS NEW ORDER requires the addition of a specified amount of Zinc Noghthenote to standard AN-D-1 Dope, which involves coreful measurements and usually special mixing equipment in contractors' dope rooms.

An excess of Zinc Naghthenate is apt to affect the tautesing properties of the clape and the achesion of the overlying teprocits. Thus, exact calculations are necessary when moking allowances for thinneng the dape to the specified

No. 3350

consistency for opplication. C. A. B. Fungicidal Roxalin Delivers Brushing Primer

THIS BOXALIN-ENGINEERED, ready-rested AN-D-1 Dose helps arreal oistroft more facturers morel these document makes pasier their job of fulfillies this new specification C.A.B. Primer No. 3350 contains the exect amount of Tine Naphthenote, the mixture adjusted to the correct viscosity

for brush application, i.e., 2 passes absolute Contractors can thus eliminate measuring and maring operations and prevent the chance of error in arriving at the specified moture in their plants.

What's more, a color indicator in Rosolin C. A.B. Primer No. 3350 shows that the specified process has been followed This propert of Royalia employering has been developed and is made available to you with the approprial of the







It seconds or contracts without distortion: always retaining its perfectly fitting circular contour. For thruse lead fixing, and shalt and housing applications, Walder Truste provides

distinct advantures over puts and holts or wedges and washers . . . it reduces dimension and weight . . . saves motorial . . . outs manufacturing time . . . simplifies assembly and dis-assembly. On request, we will gladly furnish samples and fell data for your tests.



CASS AVENUE AT TWENTY-FIRST ST. - ST. LOUIS 4, MO.

THE BUONE DONLEY LUU HUNDLE THE LONCH TORS!

Berrett Brake Dokter Makes Aircraft Precision Religion Easy and Francoical

than everywhere, is providing dependable, vital broke service for the heaviest to the liablest planes make, early and at less cost than ever before. Any aviation mechanic can turn out foultiess work with the

The Breks Dekter is recommended and used by leading alv-Dokters are aveilable to essential users immediately.

The Brake Dekter is an excepted and positivate investment Information. No abbasised

Can don or Star for the house of the

BARRETT EQUIPMENT CO.



Contacts Have to Be Good

Us, no a little bit birber-that's the trend in combat fiving. And so with the trend over Mellory skill outler capacity to build better as the no celling rises Recently the aptitude of a manufacbut in spread requirements. The

e high quality firesh.

Military occurs should the full problem, but when Mallory regreering help was someth it makely come through with the sayver. As it tact assemblies, and turnerica contacts ner one of Mallory's specialized. that the way Mallary reads there. It

function perfectly at an altitude of 60° below. Moreover, the contact totact requirements, we invite you to being your troubles to these same plastic housing, therefor personatures enameere who make it a business to 2



3 WORK-SPEEDING FEATURES

make the "Hornet" tops in portable DC welders

have made it a midespread chairs among appreasure With tra-

deep penetrating are and excellent are characteristics, is has earned the title "the machine that makes the arc behave". a to severy expite... match to a has freely second? second and sticking or "non-total" a and has promotelly low system loss ele'e spreamilie ed in design and easily portable, e All "live" parts

The "Hornes" is made in 200, 100, and 400 account since For complete details call or write any Air Reduction office, or mud corron for illustrated catalon. . BUY HAITED STATES WAS BONDS A

Send for

Ace Catalan

Pinner send my after copy

# R R MATLORY & CO. Inc. INDIANAPOLIS & INDIANA

FLECTRICAL CONTACTS AND CONTACT ASSEMBLIES

NON FERROUS ALLOYS, POWDERED METAL PARTS

# Two miles up-with an ear to the ground



Total them are othern that bold your priva-Keeping posted high in the siz is one secret of soccessful fiving. The process With its war job down have with now in knows the weather, the course, and what

it's like at the field. Lear was among the very first to make sircraft radios - had rained an enviable reputation for fine ratio and savigation ready when war needs decreased decreased and greater technical development

Some of these developments can't even be mentioned year. They're too seems. Some are in the field of electric specials council. Some will have no use outside of war.

weard abling new confects, were conperiences, now pleasures to the form of

PLANTS Flows, O., and Street Repth, 80th, MCHORS M. Pert Sale for Argelin, Charge Sales, Country,



Personal Low Arts, Sen.

SN'T A COMBAT JOB IN THE AIR That the LIGHTNING DON'T KNOW, NOR DOI"

> As versatile as the marines meanting whom Kin-For wrote in the above vein, as wall as ranking among the fastest of fighter places, the Lightning has done everything from high altitude fighting. photo recomaissance and bomber excert to ground strefing and bombing.

It was the first fighter plane to fly the Atlantic. The powerful twin motors, which give it a great speed, also anable the Lightning to carry bomb loads for wrecking ground installations. Its contrarotating propallers - aliminating torque - and especially designed combet fleps give it exceptional manuscrability for a plane of its size and weight.

The Unbinion and its airframe are subjected to unusually savere torsional, torsional and compression strassas. The greatest possible staunchness is imported to the Lightning and other outstanding planes by the liberal use of steel at its ultimate strength - super-tough drop forgings supplied by Kropp. In endless shifts our plant in turning out a huge volume of eirfreme drop forgings exclusively.

The inquiries of plane and engine builders for formions of all types are solicited

AVIATION, November, 1966.

# Why NIBBIT Templates?



MAKES THEM FASTER and SMOOTHER

The Nillibler has no work table. Job must be corefully guided by head. Pershed edges are rough. Mash material is reduced to waste Chips. Wash thickness

The DaALL's then cutting blade follows layout lines accentably. Edges are smooth and strongth No metal is worked. DaALL takes work a foot thick, or you can call 100 as more shapes at one time.

The DoALL has cut its way through millions of feet of netoth, sileys, plosics, contracted, physical and consequent materials that have gate its war production work. The DoALL bushes of former cutting records by doing internal and external soving in 1/4 to 1/10 this line of other rembals. If there is one matches tool that deserves your attention now and offer the war, it's the DoALL.

The critical POALL ADMANAGES his is





od, Hanston, Indicorpolit, Lee Angeles, Millynakon, Minnespolis, New York, Drinede, Philipdophis, Fitzburgh, Purid Ecclaries, Englised, M. Lyon, Jan Panaglan, Josette, 1stode, 1ston.





# For the infinite uses of <u>Stainless</u>— **Superdor's** seconds stands

Take mental stock of your post-war metal grodusts — and peone a moment, to review the many poonts at which Stateless Steel could add vital sales appear the beauty of undiamming linear, the practical values of strength, resistance to weer and oversion, long like Committee there the reme structures are committee there the reme structures are the committee of the committee and the committee of the committee of the committee them the reme structures are the committee of committee committee of committee com tages of Supersor's Standers Seed Step . . . . long cods of over-height motal, in specified analyses, thisknesses and widden, ready for your fabricating late. Like to know more about this product in relation to your power authorities product in relation to your your people analysism? Ask up—we're step steel

Superior Steel

VIATION. November 1940

# How one gircraft manufacturer obtained fast, accurate production flow tests!

A production bottle-neck was broken when instantaneous flow readings of hydroulic pump copocities were accurately obtained.



prayer could be tested with it, and was really solven-

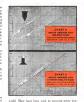
obtages systems were an accumic flow rate readings, and a





The Stabil-Via retaracter in an armalyoni the Stabb Vis float. The curves in Cleart A show that the of over 50% in going from water to cel of oaly 224 S.S.U. With the Stabi-Vin faut, the curves for them

on vaccounty has not selected the Stabl. Via calibration.



ceivable flexi for secraft services, including assolise. ants, eavined, air, aitrored, welding mass, inert atmosmatic-controlling Interestors to give total fine are

catalogs without abligation - please write on your Company letterhead, Yosho & Poster Co., 311





Stromberg Injection Carburetion "Raises the Roof" of fighter efficiency

A Stremberg Injection Cabrocter is standard equipment in the factor and highest slimbing lighter in esistence for the excellent resears. The Nursainery Injection Carbocter such controlling and instantly compressed for changes in allittote, patients, respectively and speed. The per estimates is to produce the patient of the period of the period of the patients of the period of the period of the period of the patients of the period of the period of the period of the patients of the period of the period of the period of the transport of the period of the period of the period of the grant period of the period of th

FOR TOP-FLIGHT PERFORMANCE To Stoneborg Myellon Certareho has as identify browned the celling so well on a trange off flighting, out benefits planes. A foreign-with the facel manuals facilities to Edit—archives the state Laprement

# Bendix PRODUCTS DIVISION Rendix Ariotion Corporation, South Etent 10, Indiana

# RUSSIA

#### Threat . . . or Promise?

We finance and Brauns—well possions sign bath of the world's voltage and relational margin. However, the states are all the states of the states trapks or of superconducted reportnerity will be determined by polance, and if to see front strangfine for superconduction of power loads to a letter strangfine for superconduction. All the states of the states of the first first superconduction of power loads to a letter strangfine for superconduction of the states of the states of the letters, the states are not for a long and possible see for lattice than the states of the locality of the letters of the states of the locality of the letters of the states of the locality of the letters of the locality of the locality of the letters of the locality of the locality of the letters of the locality of the locality of the letters of the locality of the locality of the locality of the letters of the locality of the locality of the locality of the letters of the locality of the locality of the locality of the letters of the locality of the loca

No presy to the contry has a gener make from both means and relations a secret that a subsidiency of the present of the control of the contro

was attacked by Effer, has cancheravity proved to a Seven entranced data break Caccus usual the strain. Become entranced data break Caccus usual the strain of the strain accusting for mostly 13 per next of Buther, and the strain accusting for the strain of the strain of the per relatives were summed by the mean factors per formed a roar accusal by training the strain of the first of the straining the straining of the straining of the Though Attention places, trucks, and method regapies have been visited by Messey of the straining front probabilities has not gone to the Fazzana front. Buther placemap and blowley explanately was the se-

But these measures of Soviet military strength—inflictive as they are of an anouspected economic development—dual to plotture an adequate detail the ster-thrup potential of the Runtins market after the year. Runna, for instance, has two and one-half times the area of the United States.

It has no population of eventy 200,000,000, and this is measuring in the most of 2,000,000 and them the formation pair valuated show that Taxon has observed and members are on menor posseporter under S for host the other disease. This is a measure of this of the potential sed of local particles of the second of the seco

of Borbons, Western, and not of the Stammung.

The State of State

a Soviet Union, however, has more than a relability in job on its descent bourse, in job on the descent bourse, in the IFVer-Your Plan, which, as we all remarks accepted about of time in 2020, we descent dark particular property to heavy industry. Planes set unt to head accept to heavy industry. Planes set unt to head the mandates and the factories which, is later, could farm out, at bems, unders equipment for range of high industries.

when he insugurated the second of his fa to Plane, promised that before it was comregried them. Invisions to participate in a persumant endibition in Monose already have been ranked to American retractions and the second of the second place of the second second place of the second of the second second place of the second seco

. .

Amend Kanel 
Some entender place the total question of gasles which 
Some entender place the total question of gasles which 
Some study that from the United States during the 
first two or State quasar there for two ras high or 
\$50,000,000 a year. Then, an Hundra industry is readough impair from the United States widels begred 
perhaps to \$50,000,000 a year. Then year 
perhaps to \$50,000,000 a year. 

Then year to be a proper 
perhaps to \$50,000,000 a year. 

The proper larger of the proper of (f) to high States pay by 
buying yout quantities of Servict row materials, said (3) 
to propose larger could be to perfect the purchases shames.

The solutions of Assertion superters with Bunds during the pends occurd by the tree Few-Yeer Head here been extractly satisfactory. Moreov has not all here been extractly satisfactory. Moreov has not all here been superiorized to the second product of the pend where they cause in increases of missisferitheting between the Rossian reproductives and the Asternation producers, experiorize in herolizer flower business already are deferred targe more has initially patient orders though the pend of the second productive credit has many mit be replaced by large government certain highly the volume of trude with Bankes after the very highly the volume of trude with Bankes after the very large trades and the productive trades and the pendicular trades are the pendicular trades and the pendicular trades are the pendicular trades.

list the volume of trude with Baude after the were large usage Microry ability to per, Ferme below the large usage Microry ability to per, Ferme below the copy of the control of goods a year from Rissan. At late as 1281, Riccit sometimes the copy of the consistence of a second of an ability of \$6.500,000, when the control of the copy of the copy of a second of a second of the copy of the

mangaums, devenions, and handicrafts. But unless the volume of parelment from Russia can be honored by enorate \$50,000,000 annually, modifu of the new security of \$21 introducts Passens needs road not be serviced, without large supplemental importations of undermable rold.

without large supplemental requestration of understander, which will be statution in that Danis affects or extracedinary potential market persistentity for our beery constraint which have green so executed a draw for the way. But if this makes realled is to senteralize, than the United States result field a very is expect them Ramon (or from Ramon's follows if any) from ten to twenty market properties of the control of the conmental properties of the States of the Conmental Conference with the States of the States of the order of buying larger supplies of Stowers products.

But scare have the Ramana market itself kinges upon acced compensive action by the weekly to be design substay-endeatical soldies. If these between these is held to a rehument and if relitions are straumed, the fixer of trode all ower the world will be advancely affected. Burney, long the occupy's biggest export outlet, contackly will sover take the bold anger accounty fortunity will sover take the bold anger accounty. So

resconding states, which are by industrialism by Mantern under a freshe three depotences are Germany, and the Areis world with it has not do recovery, and the Areis world with it has not do recovery, and the Areis world with the Areis and the Areis and the Areis and the Chail distance of the Chail distance in the Areis and the Chail distance in the Areis and the Areis and the Chail distance in the Areis and Areis and the Areis and t

It demands of framepoes believes business busine

eatest that this bid for conpositive article erephalicitary demands their each saids and have complete freedom to determine its valential publical and economic organnation, without attributence from the other. It is that caffor of leadershop upon which our future bloops.

Show H. W. haw. N.

# It Takes HUMAN RELATIONS

The STORME WAS STORM IN the president's owner office. A report had year own in the failor office, a requirem were studied; retailed the plant part handing out fordings to the investigation of the drief encoder bassed among the researcher. We see to bear the branch of the contrete appears which was some to failor? Finally the contrete appears which was some to failor? Finally the contrete of the contrete appears which was some to failor? Finally the contrete appears which was some failor of Finally and the contrete appears with the special point of the contrete appears with the contract of the contra

width as bar. Canal dit up applications for the norman, Go set to the runs gate and note the gradients with the crucians to the offer at one? The first solendar gipel, meaning to smooth? a "Yes, sit," and set set to perferre the normal trafit due occurs, the their sum arrived. The president granted these ordeality and trained done to energy be used because divinis. The produced the searchy of his delt and not done in the circle with them, "Telders to cause reads way north under difficultion."

That we couplingly executively in this negativities We operate here is a discoverer self-we set as a discoverer self-we set as a discoverer self-we self-we self-we self-we self-we self-we stranged for a larenchate general meeting of the was stranged for a larenchate general meeting of the condition of the self-we sel

The PORTORIO PARABLE is not a deems. It is a happened once and it can happen again. The moral is a diagle as the deem shore wands of the golden sale. But haw many passificates not handled their inclusival antidates that way? And here many boards of directors would suppose of that field of action if they were consisted. De cidedly too few is the survey.

there is pleaty of paramidion in industry. The infrastral community is full of locus argues, group transce politics, service pion, galls wanden and similar things which have a definite and an important plant. But thay are not enough or nearly setting.

The associates who has the harves-were gift of units are transcripted to the property of the prop

and they are not energic-not energy motivity, and the control of the control of the control of the control to the control of the control of the control of the most with in the conspare in the most highly priced promotion at any approximation perspects. The post on the book, the interest in the core body or the allies, where most the interest by that they are in the elimination of the control of the engagement of the control of control of the control

L'about these first things as well as lang oors, should be homent with thesesters and abstars in the themselves. They abstad surremed themselves with use or sessesociation who have for surrements and the surrements and its sengments, because it in the most respective pole for surrements, because it in the most respective pole work and do it wells, more generated abstacle to all the pole of the surrent personal observable to all the work and do it wells, more generated abstacle to all the poles of the surrements of the surrements and the surrements of the poles of the surrements of the poles of the surrements of the poles of the poles of the transfer of the poles of the poles. It is the poles of t

In the industrial period that has jest passed, such of the strifts and severs and defeat that management has suffered at the kands of labor roads have been suited or spharmarting submart to will be provided as the submarting submarting to the strip to the submarting supportant, it will be no what, in fact, that under management scropes in full copositivity in this direction, the very sucrival at our system of private understand the submarting subm

Jesli E. Verle

TWO IS THE IRES OF A STREET

# Contract Termination— Key to Airpower and Security

By J. CARLTON WARD, JR. Associal South's State & Applies Com-

Columny of the alcoraft ladestry-and with it our means to main. tale the percamplements on encounted establishments of the Wor Contracts Settlement Act. Here on eviation leader presents of tossible program for such administration.

and \$1.500 000 on 1521 In 1923 remembered, verbal requests were fre-Darton-Widels could building please What happened to general business durthere were between 12,000 and

-they had proped up to 20,000 More so the war had been about \$200,000 con a war: by 2021 they bit a buts of \$627.

continue \$7,000,000,000 in 1907. Then

tree of the fast was, response toom to 20 in 1939, when World War II storted to

substance ability to name forward and

hunbling personal remonstition, has the

Terrespins and denoted officers

spectors should be persultful. As recould be applied a rate of reporting based















# Give 'Em the Data . . . And They'll Fix It-Fast

By DICK D. MOYER, Service Seatmen, Legisland About Care.

Experience brought forth this service rep's count proposed to help

cally-shape their fightian croft in the ole-- Frent Eshire Inpurplers combuced and februation of of except sucception of flight... ASC

others and me stock-for so heller value and probable need for tooling in-Faurth Schelon depots are small-smale

PTO CHES BY IN COMMODISHING manufactures slast, the execute differ-



Tests were exceeded to the obje, using plant take, foreign

would be reported to transport in. And so, tect, salts conto se morteco, on request in migrafilm form. With our presen

Assissing the approxime appreses of these transport places -both immediate postwor and future meaturer - designed to etities propoller-turbles power

> 2407 N By PREDERIC PLANER.

(Part II. Pass III. Age. Assessed a

corne and will us doubt an on landstation retransition tree. This analysis

evolution of structure, scrodysamic

& intermediate present transport surry prepationismine (at engineer with and will gut representing E figure ambination passenger and corps from 20011 and property landing jul engine and regengration

The Economic Future

Of Aviation Technology

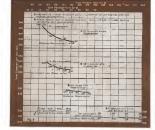


person and taking are meanted on a propulate (\$1 pages from harbites page

THE EAST (\$10 to 10 100 100 100 Surfature Peature Sumport With Purpolar Sertion Engine Panange and Carp

extends on the possibility of obtaining the described in Fig. 7 is specified (Tubb) VI for both Dengto D and El

The curves of Figs. 6 and 8 show the cultures the speciality of a new posture Referring again to Pag J (Part ), Jan. (unersoor) a peobable market for 200.





had follow hadronic flatour continues time with

Since these sets per to-note Dent form many per to-note, 500 Staffer and automobiles common become



# What's Ahead for the Helicopter?\*

By C. L. "LES" MORRIS

Objectively quejeg the key fectors of stillity, performance, design, end price. the author earliess specific postwor roles for the rotor creft hat sees the public merbet eweiting subsequent growth over a period of years. Meantime, he weres equiest everdoses of postiwhen as a remark for encurnaried anticipus, declaries the legical development lies between the two.

the bars. He received distrance, even of the issuedate corredatives of the helthe presentate of the parameter from military service today, John Dire will be

received course of his pursuate. This has

Sizes then, helmoster subheat has Induland in some language withful thesi-

inc. coming to a climan to a record

poolwar latherater would sell for \$195not 2006 or 2006, but awards 2005. Let 52 or \$20-or perhaps even more? With promise a freel price for exercising Extfor \$5,000 after the war, 6th resolvery 990-81000 Therefore, "median-original"

shooked the sixtreft infarity by capabledrepossibility of an early industry to meet

Its priest ups, appears you mailties come of pretries, still has a committee statement might be clarified if it is coalborserower. Arcraft engines, on the

The follow of this 1928 ferrogs was In surgering the believpter's fature. that madificiar above summer comgreater significance. It is apparent that



#### WRIGHT AERONAUTICAL



Producer of power plants for such creft as the Basing Seperfortress and Lockhood Gentralletion completes querier-century of productive. Striking industrial record lectades design and construction of planes as well as sec



Spen other Wight Arm artered field of sinframe meastrates in 1922, it denshiped file NW-2 weer for Meys, With GS Ip Wight Navedin report it haden would a implicaremed of 385 mgh. Sinked for unity in Schmider Cap floor, it was light Nave near patting when having yong block sipped patting when having yong block sipped



#### MARKS 25th BIRTHDAY



# Curtiss-Wright Presents Postwar Transport

resultion from world-wide military service; most opported chance is no designed nose giving better activities and improved visibility.

virtigity all-yiddol, cardy remorable fool tanks (see page 150), improve

José have should already marks and accounting he sald? Delvice into that portingst agestion, a speceptful evietice product manefeaturing company which has its noctour plans complete declares there's....

# A Place for the Distributor In Aircraft Accessory Sales

In the way that well be realistic to

By ARTHUR S. BROWN, Soles Messager, Seelf Asieties Corp.



entire, some presenter color, nutritude, and not record. Mell, sweet personalized with field and clean side much be received with \$100.000, and become connected the books being colds from



AVIATION, November, 1946



Feer instrument any recovery for extended figure in replicated missister, over Author Smith

### What Kind of Instruments For the Personal Plane?\*

By FREDERICK H. SMITH, Sproy Symmetry Co. Utility is a must if real plane merkets are to be developed, and utility can be achieved only with monor instrumentation. Here are "space" for three types of respecially priced people to sive

more hours of fiving per dellar of investment.

complete defently doubths on her as

qualified to any New for extended, from





To meet the need of aircraft engineers for an anti-fraction bearing - lighter in wright - of compact during - with maximum rulid and threst lead carrying certainy - Timberengineers have developed a new series of innered roller bearings.

performance of Sikorsky heliconters . . . while giving them all the other advantages of Timken Bearing during for aircraft ambiguitage, assertd smoothness of operation ... ease of handling ... power conservation and endurance . . . economical maintenance.

Consult us on your requirements. We will be glad to make recommendations. THE THICKIN BOLLER REARING COMPANY, CANTON 6 0680



9 A Klingde XXA beauter motivates over End such the Tambon Ecourage on the Main Reser Blade, turn in the Tabl Enter Green Son, and

#### BASIC DRIVES FOR HELICOPTERS By JOSEPH S. PECKER, Clauses of the Boool, Batch'ings, Inc. Presented have to a closely and affective introduction to the fixedy

subject of believators. Bealissian with the readable autopins—the

transitional design between automobile and 'contar-the verious

arrengements and functions at basic transmission units in single-

refer biasist and associal rater craft are stearly engineed.\*



#### paller is oblined. (Disserver opens of this type could are sharpful in Eq. 5.)

#### Skerdy X5-5, the Self Adjounter is nice representative of



Date discret very in discrete, chard,



Found (Ed.), Financia Falson, and Higgies. (A) show angion: (B) transmission, including outside (C) mortcol slows slow its selection of the same (B) states to anti-decay properties. (B) coming manely 20 to 90 sec. This resulted in

1936 for Astrone Co. of America, about transfered daugn between Pypind transmission





Fig. 4. Theories allutation of angle-rater following with well. Fig. 5 Wissial type Salicapter with rates fathered, as became expedien formed of Schools, Passer (Self), Present, Safer, hard by Paste or Surmany and Platfulform in Order States in

autoritarilles, writest for al stalles

carine from action as a brake on the

A done must be provided to the out-

neer at all times. The stability and Demants

The presented of the datch, resel-

Witness Transport



0.00







Acongement is not empirical possitions,



Fig. 6. Co-solel type delicative as producted by Se Sellicat, and by Miller. Anti-baseus amenifer is afin bested

AVIATION, Number, 2844







extel return a typical averagement for this type dull report.



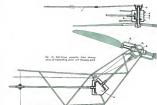
#### Fig. 14. Another heal; econoperant for 6-least transmission with one of single engage. (If or

denes and provides a upique, comme ness be musted on the slow-speed shaft.

- Daler does ---- Josef etiles the design characteristics which result

tween the engine and the

and struing infrarent \* E-consenses of Far 12



rotates an axie (C), driven by a pair of

Swedigleto Relative again to Fig. 1, we note as

is the blade angle or plot will given

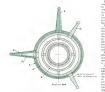
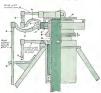
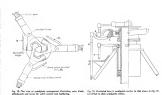


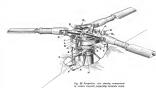
Fig. 17. Elevators and plan nines of trained reset.



House it is necessary to change the Performs often is obtained by \$50mg

shown in Fig. 1. The organ would also





# RETTER FLIFT TANKS MADE FASTER

Difficulties in less-seam welding at tests aive way before C-W's combination of ingenious jie and Hallare process, Resultent joint is asserth and stranger than task skin, and wide procetime as is foreseas for this fast measureduction waltime method.



Operator year slot to top of placed sections of tool into which litter strip for world is insected. Shot, next width at wise field out, automobiosity officer bust and advanced to their infection, to be writted.

Tiere were many germany variable elethe welfing head electrode discuster \$5, depending on the weldity machine

Sees separating several sind are S. A. Lahoma (right), passed foremen at Cortus Weight St the weld revised as reflected amount to which had headler for side orchose of tool for various and validies both will before any



please foul family. One and section of test is shown as flear smally use foul couples are amplitude on shown as exclused fracti-

AVIATION, November, 1944







fearths fifter stay of hour motel classinon (500) in, by No to 2 help that bedrame

The flow of believe yes, breathed perulation of the property of the backon his or clamps was necessary, the heat fee" the two rections lobdow three The melding head in then encoul to the

The operation of the Hobarc welding

Analysis of Continuous Beams Having Variable Moments of Inertia

process an events room of the countries co-By DONALD A. DePLANTIER, Clast of Sources. Presenting a comparison of the conventional (constant I) and greered (verying I) forms of the theorem of three moments for the more asserted exactifican at beam leading

dition of leading. The modeles of clasports in sequence, left to right. Mr. M.; M. (Markers received to A. C. I, I, I, I -- Moneyte of levels of beau #TAL or LAL windows and an (#) M. + (# + # ) M. + (4) N = - N.D. N.D. (1) modified to make it spelicible to a beam

 $-\frac{L_2}{2}(W_{\alpha}v^2+W_{\alpha}0) \qquad (3a)$  $ext_{-}C_{+}W_{+} + (\omega C_{+} + 8C_{+})W_{+} + 8C_{-}M_{+} - C_{+}C_{+}W_{+}C_{+}W_{-}C_{+}$ ellicante However, ruch conflices be It is evident, by impection, that Eq.

 $SSS(0) = -\frac{1}{48} \left( \frac{W', L'}{L} + \frac{W' \omega'}{L} \right) \otimes S$ or LBB (i.e.  $=-\frac{4 L_0}{12} (W) \omega^2 + W_0 W_0$  the

Fig. 7. Disconnects representation of Fig. 2 Subsects service heat-free

Fig. 5. Yorkling supports alreading dis-





Com 2 (b.) | Yazyine 2 |  $C_{\rm SP}(L_{\rm S}) = C_{\rm SP}(L_{\rm S}) =$ 

- 1465 BTol + CSBTell

 is to be mided that if one spon has in 2 looking and the other has Case welling, the beam factors applicable to in spon-case must be used here 4. Concentrated Loads (Fig. 4)

set b(a). Constant L. LHS  $(b) = -\frac{1}{6} \left[ \frac{P_0 L(v_0, (1-a)^2)}{L} + \frac{P_0 L(v_0, (1-a)^2)}{L} \right]$  (7)

we used (a) =  $-4\int_0^1 p_{\alpha'(\alpha)}(1-\alpha)^2$ , (b) +  $f(\alpha)(1-\alpha)$ , (c) =  $-4\int_0^1 p_{\alpha'(\alpha)}(1-\alpha)^2$ , (c) =  $-4\int_0^1 p_{\alpha'(\alpha)}(1-\alpha)^2$ , (c) =  $-4\int_0^1 p_{\alpha'(\alpha)}(1-\alpha)^2$ , (d) =  $-4\int_0^1 p_{\alpha'(\alpha)}(1-\alpha)^2$ , (e) =  $-4\int_0$ 

experies. Chen S(k): Observate I  $1.88 \cdot (k) = K \left(\frac{L_0}{L_0} + \frac{k_0}{L_0}\right)$  (%) or  $1.98 \cdot (k) = \frac{6.87}{6.42} \left(k_0 + m_0\right)$  (%) Chen S(k): Version I

LBS ( $S_i = B\left(\frac{k_B}{\ell_1} + \frac{k_B}{k_B}\right)$  (48) or LBS ( $S_0 = \frac{R_{ij}}{R_{ij}}\left(\frac{k_B}{k_B} + \kappa k_B\right)$  (50) Gestlesses-from Fectors Is all of the procedury equation orvolving a recycle associated of corolla credule associations beam follow have been

No. In Eq. 6, once the governous values  $R_c$  (see  $R_c$  and the case) was below the compared. These review are should be equational.

So,  $R_c = \frac{R_c}{L}$ .

 $R_c = \frac{E_c}{L}$  (1) If count be bosse in most that the regtions of the curves in Fig. 5 are peorard on the relationships expensed the equilibria.

ions of the curves in Sig. 5 are post and on the cultimentary expressed is in equalities. Span A to B.  $I_A = I_A b b + 15^a$  (14. Span C to B.  $I_A = I_A b b + 15^a$  (15. In Eq. (151)  $a = VK_c = 1$ In Eq. (152)  $a = VK_c = 1$ In both equation, and all indexpogramatics, i. is a function of the spagamence, i. is a function of the spa-

he name form as ym(nar10)\* lecusions at beginning of article; (Term to page 207)

### Suspension Mount Controls Instrument Vibration

Now principle amothers instrument-dameging impulses by breaking them up, then neatrolizing each part in term—an effective angineering application of the "divide and conquer" axiom.

Ventrom a report fromt in the side target, and ordable or at the same of the s

eliminated, the diverger has to make a



owner. Act and 1-1 we intrinsed these IA and 1-5 we privary and necessary redisor. Each set of parts absolute relevables to one direction.

panel is supported at, or more, the cornect, it has been found from the proclaim type of conflicting with relieve present on seconds will other be expossible to and low confliction of the processing or and or conflict.

for to individual municipions, only a

Fig. 2. Bullions count (1617) and count approximate (right) are ribotion balls. Fabronates as often at fabronate count stars recoperative action. Fibration of 15 replies per second (alone on hechonoles) assents in 160 in AYLACION. Normatom. 1864.







No. 5. Cateron shahedes show riberton-standing and possible and assessing. Formilla.

The used annuals transmitted are

Fig. 6. Statement panel shock-absorbing as



#### Mass Machining Features Buick Shortcuts

BY HERREST CHASE Four intest on new worse to do labe exister to last mondoner. ing only 7 eperators—to take the place of 36 pails and 33 man.

A starty finding ways of doing pain

handkey. Why not, if was aggred, leep the heads to single finberg, shiffing these

this compose's production man came up with three machines remain-





AVIATION, November, 1944

# How the Hydraulic Fuse Promotes Flight Safety

Functioning with the some efficiency as its electrical outstorpart, not includes leaky bydroulic lines without affecting sound over.

For 2: Assessmen's Hodonicas. It is \$ in long and weals 178 fb.

W manusaners is second hydrode. We present a largely clean to the fact the briefland fined largely clean to the fact the briefland fined large largely clean to the fact that the briefland fined largely largely clean beautiful for Sour, lowwers it of facts has been for Sour, lowwers it of facts has been for Sour, lowwers it of facts has been for Sour, lowwers it of facts that the facts of the

between the green prejons and the ordered strong and strengt is present flow from the final line. Tourhamment cylinder (cf.) as that a parallel we'll delect valve (a.) as that a parallel we'll delect valve (a.) as that in the control of the strength of the control of the co

The property of the property o

moreor the operating orbidar states. If





ner indicated and the few many for creat at ingention of the contraction of the contracti

whele field one for its ring a rins.

The rins of response is surrised by a ring of the property of the proper

AFIATION, Navember, 1966



Eq. 3, Hydrolius solutival  $\alpha$  constant-process Aprillation system



Fig. 4. Connections for electro in open-center hydroxics system

one to a selective when contribute to a selective when contribute to all a greater and a selective when contribute to a selective to the selec

## Nomographs Facilitate Sheet Metal Layout

By B. MATTSON COMPTON, Another Director City Scients Codes Street. Complete complement of numerously speeds levest at first steels and minimizes changes for error inherest is ellerante seletions. employing methemotics and triplend-error method.

809 010 015 020 015 028 029 040 040 050 035 050 040



nd NUMBER STREET



bead in send (Pie. 2). The center of







I Developed length and width. It is

Our cases from Fig. 5 shows the







disposal has convecting the lower and (Turn to rear 200)

## New Method Ranishes Wire-Stripping Risks

Demone to fine strengts is everted and much firm is severil by new insulation-removing mathed developed by Feirchild engineers

At the stage, stripping and shealtone

In view of the above destructures, it







Fig. 1. According of 1N-co. dis. allowing fine when from which involving was streamed. Dissel-



Temperature of "A" in lengt at 425



## PLANT-PRACTICE HIGHLIGHTS



Tender Principle Speech Shides © By employing more firest besting methods as employed in an doctor control, Giova Li-Marten Co-mains in has control for Spring models assembled board from a list down to 15 eeu. Solomar first and singly in an appliance fire as desire greft, then we consolide and demonstrate the control of the control of the demonstrate principles.





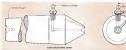


ten Preisilen Brei
This salely-who todate, dendynd pr. majore sugarbon of Joh & pr. major sugarbon sugarbon sugarbon sugarbon sugarbon preisilen present sugarbon sugarb



Labricated Lette Center

• Unity a pressure gen to force labricant reused guest all labric strate is resident vessel, General District has deviated we to do more security work laster, point golde does not head, a food of collection on series of ones. General force of week distributes labricant at goest of forwist pressure, from who R is drawn attended ones by method of provincing.





AVIATION, November, 1944



## All five DZUS-equipped



of the weission influency, both a requestion as the next depended nations. Thus, there is no form of the first term of the control of the con

#### "No word SEES or the registered trade



If "y a rite undertaking to malistees the finebox on a diect of 30-box from a beast rode as an expended by American Toport Artifact. To no other field or interagamental, including this speciation of last fillated, finebox discrete an extern one time to begin down and downly dis leaders of compact continues the chemist can do a finebox discrete discrete

During Inadiagn and thiologic, and manchains over parts of a few level bear. Spen is present on a few level bear. Spen is present on a true properties will have shell over the secrets. In swelling, the size amount of the meter does not completely clean all, and any in the proceol emportation, a milk deposit resum. The presents of water to shall enough the complete of water to shall enough the process of water to shall enough The will deep milk the present of the origin in your drough the potts and, it is been origin in your drough the potts and, it is the meter of the present of the present of the present of the procedured, ceremially it shough it

A. It is been particular and, if weatereds do though the free of files and the second record free of these of these of these of the consistent files of these of the consistent files of the consistent files of the consistent files of the consistent files.

A Plane Is as Fit As Its Finish

By JOHH BEENNAN and RALPH HALL Front Step Forester, Associote Capital Addissos

Anomaly that corrosces was a quick victory was that sain list "right." AEA pairt experts made a concentrated study of finish facturs—and came up with a special technique which eliminates send for a priming cost

maliterals depends an much one the reclaimers from of the review to had then controlled that we at American Resport Actions. In preparate a surface on one of our content more time and study to the authors. Solutely 155-44 Phylog Acad to receive proposition than to any other plane of our half light for explain costing, we



AVIATION, Numerics, 175

#### MAINTENANCE



surface with some and still detail. A third most fellows up with water plant.

due to the fact that control of onlier on the skinn. However, this conting material

Second step is strapping for show check of condition of molecu

shows Zigns of deterforation. That is

also for softing pan waterfield former

on fails and half bottom in first removed with a still break break and but water

AVIATION, Number, 2944







## ATSC Tools Save Time, Equipment

Millians of membours and a wealth of equipment are below seved





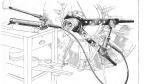
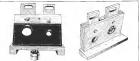




Fig. 1. By upon herd young of helt. Teles

modeled 7-ten pack (Pog 1), P. P. Baker

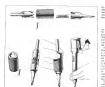




done me and pieces of scrap. Result was rets the reefel for this device







my flow to prevent rolling at a teme





## SYSTEM Makes the Difference In Instrument Overhaul





For measurable's Secur word has builting pressure instruments. In prester in pressure planties for

#### MAINTENANCE





game to the record in a rather searthodos

Sels realise basch for plan too fitted with calculat potent to protect weeken, Northebad

Two of these breekes, each 12 ft, long, along the famous before current away

sir modificant room smarter from the room, next to the radius, room, contains Formics-top mishoesay test benches 14 chanters, may be obtained and pressures



riding form' aried death in reduce seeffering AVIATION, November, 1844

stands such having a capacity of right any week,









Band agregat with intenting standards for extinction which are ampleyed



## CUSTOMER SERVICE DIVISION

	RAFT CORPORATION
006	OWNER.
	ALORESS
KATION	O DATE
	O DATI



Londing Geer Up Lock - Vope Assembly No. 19054

1 Between Face Tool No 8 51700

INSPECTION AND OVERHAUS - DEFT. NO. ( AN315-28 Gerlack Furking Areacon so. West and fraction Alignment and condition

Scrudes, was sed damage Day No. 1 1 2. Assemble also seek was male hydrocky flood. Made more the please sensing me. No. 8 is drawn up flock web-

Engeneral Tea. Dev. No. ( )

cylinder No. 15 and property referred with reces No. 5.

5. Concert the up link cylinder to bydrander con operation and pump persons so 1000 F/S1. Check for Irola

## Lockheed's New Service Forms

Service division of Leckhood Aircraft Corp. uses forms of this type for recording overhaul and maintenance work. Shown on opposite page is form comprising job dispram, tool list, and disassembly instructions. while herewith is impaction and everheal report giving parts list, reessembly lestructions, and test date.



## Snow Doesn't Ground RCAF

Righton of meeting figure quart in a feet of some made offer the man feedback specially for PCAS (RCAS plaints).

Each year in Conede, George Seen threatens to Seek Demision eviation with his speal white borroos. But Royal Casadian Air Force toolics requirely rest the General, Herd's how-



Some frages are used to bold beed bears drifts which

THE REF IN AMERICAN IN CONTRACT

care dairporation. This method has The selful perform is by far the most

Convenied gang rollers are used to the ECAF in sets of three. They are





## Quick-Disconnect Simplifies Battery Changes

By DON DAVIS, Cases Sirving Development Co. Heartily welcomed by majetonesco grows stationed at sale-Arctic

airfields, this invention earlies two field even to replace elected? betteries in much tester time—and without removing their gloves.



Dending above construction of Anthony play. Earne headedwal executes exact formed



The wonterick is affect to the bettery care regrateredy. Its material is altern-

Exploded vice of parts of Course Setters





wooden adapter it becomes sample (linear portion of dissination) is used

#### Course's Tire Mounties Teel

poster. (5) hav are on wheel and re- either so floor or low table. (Shetch



ATTATION, Nermber, 1944 AVIATION, Morember, 1866

## MAINTENANCE NOTEBOOK

UAL's Airspeed-ledicator Tester . Dang a sprag-assisted sykoder to develop air

Eastern's Tech-Test Setus





AVIATION, Nevember, 1846







MAINTENANCE NOTEBOOK

Marthren's Skeet Matel Clare Devised by Clifford L. Nebun of Northron, this simple. by effective Wine classes for moving their partal in the aumorale. It error even the amoralest plates without





By FRWARD F. THORP. double Man Control he uncommunical or improvible to install

Here are the workles details of the earn nicken system missaured so soccessfully by All American Aviation on propriet development poleting the way to fast, reliable airmail and air express service for counties, communities where conventional airparts would either

TRANSPORT

by military operations, the agra motor-



The July Richard C. duffeet argueges and first

studied a number of neon lights which









For 5. (about) Continuor wheat to be deplot confu plans. For, 6. . chaft on bottom of touckage the altering preciseous who sector the (right) Section view of policy plans, (1) is pulsay hears, (2) indicates: policy prin, (4) economing and healing words, (2) delivery con-beam in released another, (2) pulsay heals, (4) Mallon and, (3) hears, which both and/released a married foliage beam marked; lives

least door. Heath (3), with my friend

The place a Stemon Belief, carries







For 8 Apparenting during and word. Since





on the inp of the supporting ground size (Fig. 3). After pressing the pole This meed, contribut with

AVEATEON, Navosber, 1986

## The B.F. Goodrick Airplane of the month **BOEING B-29 SUPERFORTRESS**

SUPERLATIVES have always been public press. Suffice it to say, that used, and often too freely, in de-simplane is destined to write its own scribing new warehoos. For the colory on the pages of huntery, B-29, however, superintires seem place has ever made such a starting debut or surremed such awe-inspiring potentializes as the Boring

alowing tributes that have already. Superfortress "Airappeared handroh of times in the place of the Mouth."

Every man and woman who belood make the B-19 possible shares abundant credit for a remarkable achievement. Adding one plause, B. F. Goodrich saletes Become pages the Basine B-29

In our or peace B.F. Goodrich







## R. F. Goodrich

## PRESSURE SEALING ZIPPER



ONE of the newest products of B.E. Good-eich research as a pipper which wen't

B F Goodneh engineers have taken a rubber seed that opens and closes with the fastener. This real is a strong arrangement of coordinates righter little which negrodes an effective and complete seal from zero

menting, depending on application perstage range. The pubber won's crack when heat at -70° F age become soft at 150° F. Weishersbilley is good, aging tests

Three types of B. F. Goedrich Pressure Scaling Zieners to cheose from

Style 600: Non-Separating type scale throughout its entire learth but is once at therap It has a slider which can be operated from either or both eides. This type of closare may be used as applications such as ex-

Note 412: Separatine trees scale for extire length but not at ends. Slider operates be example broads through eyes under buch from either or both rides. This type is now shide faurence and added a precurate excited to both and a long entire length. Shider coveres from side consesse sealine line Originally developed as a closure for pres-

## save vessels, or successes many other squeest-

Among the many uses suggested for this unpolications (a) For joining sections of both low- and bath-pecsage ducts (b) Seelour loss and instrument cases (d) Weather come to der retenzion as people learn about Perhans you may think of a use for at Our discous your applicances. The B. F. Good-

each Co. Assessment Derivon Alexan O. despit in

B.F. Goodrich

FIRST IN RUBBER

### NEW RIVNUTS FOR WIDER PANGE

### OF FASTENING APPLICATIONS!

#### RIVNUT installation is SIMPLE... FAST...

2. Rivert and polices about to

3. A squeeze on the total lower

TWO NEW KINDS of B.E.Goodrich Rivages - Brass and Splined Alaminum-have recently been added so the line. Both of these new renes. like the reprise sluminum Rivage, can for smachment, or as both at once Inaddgion, the new proce have the same below.

They're sample in design (one-piece): they're comparementaries a smaller information about such tree as given



zenilable.

SPLINED ALUMINUM This Riveret is ideal for use as a one place in wood or planter because the relined



RRASS This is one of the newcomers-a scronger B E Goodrich River for blad feature where events trank and their strength is required (about 50% stronger than alumanum).

#### 53-S ALUMINUM ALLOY This is the spendard

formake jobs. It is hight, strong, corremon-register . . . and so early to install, types, stees, graps available.

For more facts, get

"DIVNUT DATA" Coernos fall reformation on Burger





herser adaptition, that has performed A drawn carries recommender 150 ft.

Several charges in design of the observisible to got the box in the side wal 000 takes dudy. Europhys of these shows. 1,000 excels, about all of which can be

In a comparatively small furtises with handed when conditions called his and accepted diseases which does not

For 12, The product method.' Economic societies involved polics, Nober Assat, Spine, and & was with constitutions of from 600 to 120-

Fig. 12. Austrália really and acception durting (Sect Self), and enforce (Sect right), and short equipment was also designed and kelle of AAA's Pithkerph slope

in which to locate fields.

seconderable group of communes can



## How Calculated Cruising Foolproofs Long-Range Flights

By JAMES E. REA, Japanesey Just Alar Consolidated Puller Almost Corp.

Whee yea're on resto correins menimum poyledd on o minimum quentity at fuel, it's imperative to be able to determine is a jiffy if yea've sefficient feel reserve to not you there, or to turn and fix

back, or to reach as atterante point. Here's a portinget treatment of long-rooms craiting technique for trees-scoon flight. PTS A reser mor delivering a

seriormance curves to us to obtain a

Distance to \$17

The reserve to be carned, in addition

For example if the takeof (see Fig. 2) of at 9020 G C.T. and if the reviews

the red of the 15 hr flesh (1600) Shifting Equi-Time Palet A table in their made for feel par-

For custole at \$200 G C T the fort process of shifting the forests \$3

cratical on language flats, not only

dy - Detarry to KTP, as of frequent

- Take to BUT's as of towers. Co - Actual time to arrive at femous Thus about in to ... As or thus about of



#### TRANSPORT



The party are of reasons are no secretarist. Then, from eq. (8),  $\frac{S_{00}}{M} = \frac{S_{00}}{M} \times \frac{S_{00}}{M}$ 

ETP, may be determined by studies the formest ETP, by in smooth equal

Then, it has been proved that the new Eighty select a collible and economical feeting maximum range were studied, and Rule 1 Cost condensed propelary data on

Procedure CAN for extracting neutrons recycle to ethicited over excepted subspects. Prohiphyte share dummy excepted subspects dust with cond in political over it. Asver politicals: best speed

## Airspeed-Dial Device Simplifies Range Procedure

By CHARLES A. MOSLEY.

For the military pilot, ettoloment of meximum range is a prima "must." This diel oard was designed to tell him hew-in less then





## Mexico Offers Flyers Thin Air ... And Opportunities



Five of major prets which itselfensk rapped towels for Eyers in Coatest - There "time-ration" are \$2 on septiment of interest City. Finds below Stone on the winners triminant falors late and or or need than follows had been follows but here follows the country want falo because Papershaped (Aght), ming 16 883 H and 17 387 P respectively out to seen beyond Eald. Mountain in distance are 11 360 H. High

BY JUAN NOLAN C.

Sales the harder-where the airmen fiels high ellitudes "make things hoppen faster"-there's plenty of room for both pleasure and profitable from But, says Author Noles, the crying need for

So here we fy high as a reason of to) freez respect to serval took or These local enolyteen are earlier new

June Notice C., nation of this retails and ground school advention ander Meson instuctor to be quelified each map least confident wall fin proable exception of

or comple the reall personal plane

Abouted to execute construction. Take demanded or Margin, one carbor, it "is more precess type of fisting," receives must be conjusted with in appealing from this play between and the above of aboved of Assache employees the distance. Ar-





#### CIVIL OPPRATIONS & TRAINING

descen, in might be recovery to come desired in Chipmenture for more graphed Secure of the flor air prevalence in Central Mayor, visibility conditions are

correspondent not not ment that for all in well known reflexy ratelian town (Tarn in Jacy 276)

#### Two mean Musican elefable confines to be cannot be poor residition.

gastiles, one can, by flying at a sension altitude of 10,000 in arrive in Assentan

prior to its medicaculars. As seen helt, German layout, which never



AVIATION, Navember, 1944

## Parks Plane-Buying Plan Combines Time Payments, Insurance

Arranguests including porticiunderwriter sets pece for postwer personal sless fromthe as lecel berly.

An internal part of the class sets forth.

organisation is Midwest distributor. These rates, assorbing to C. I. Mador-

Lineard kell rates are reported as \$4.50 In addition, concrast may be obsumed

AVIATION, Numerics, 1844



sources was defellow, prepayment (35 1/2 persons on new ered to frame retailed, from till and remodel payment charts, the total contract amount; establish amount of monthly surements according to length of the cov-



NEWSWEEK of Autom 28 reports of Lieut-General George S. Patton, In. as follower "If he had to shoom between trade and helldegers for an ignation he would choose read-haddest estatement ower time." Most then a countraction machine, the buildoner has here a mayorful factor to whented many hattling To strickly, efficiently fit ask shafts and hearted goes lots buildings transmission does America engineers designed a special hariunital enoughly ness. A surveyor line brings the cases to the moshine and reminers there after operations are completed. The part is

#### stopped, looked in position, pressed, and released by this hydraubrally sucrated, such

hatton australial mechine. This is contine example of how the American execularity increase output of vital war materials. When the war told is done. American's scopplets rervies of carehines, tools, and entinecessary will be excelleble to exceed assemble took of errelian goods. Let desermen engineers show you have broadened or exercial machinery can sales your productive needlesse. Write today



## Canada Sets Up Beam-Approach Flight School

1 has the ability to return to be-

Led training it as imported part at

By JAMES MONTAGNES, Combin Committee Control New training course gives technical and flight instruction to Commeanwaith Training Progress pilets in concentrated effort designed to make them "weather free" fighters.







verted to divise the mon-engine Outcode

a curve hoof shatting out landmarks on

Looker H. Golone, clarif Eight autractor, maps a treasing Eight for autrament school's studies!

AVIATION, November, 1986

## China and U.S. Chip In For New High In Cooperation







was my Mr. Lee Hurt Few and Gol. Ivon Smoot. When he was How Assistant and Chicago find you want freeties on



AVIATION, Namesber, 1944.

FLYING EQUIPMENT FLYING FOUIPMENT



## Design and Construction Of Nazi V-1 Flying Bomb

By CHESTER S. RICKER, Cornel State "Accessed" Presentian haralators surrevenied details at one at this wer's most destruction was non-what it is and how it works

an employ day eagure accounted about probably a uself for setting measure flight.

So is about the instance. The use or about an about the

S Normality the Allies had revoked.

n all-seed a company could not be used stands it. There are also reports that a

then probably credited as welched to until autino (G) When som they after al-



REMOVED Salary Standard wine structure. He existed one provided, Ming his is walked by and Areand

he step of steel relied around take and specialised in place. Seeds are wolded at the





as the of the same substituted in the and (C) is assessed in

## Preview of Coming Airline Financing

By BAYMOND L. HOADLEY, Famout Nov. Market

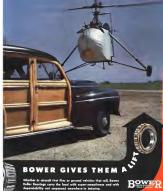
Becont equipment orders by moler corriers would indicate some det stark officiary but it assesses Wall Street will been to lack to other fields for new securities. Here's why

Obviously the artines are going to

Assertes Airlines officials unlet aut

TWA officials foreign that the com-





AVIATION, November, 1964



"We should like to express to you our complete satisfaction with the perform. once of Champion Spark Pluas . . . we were able to obtain the remarkable service of 100 hours between changes . . . they required at least 50% less time to service for re-installation, since they could be cleaned and re-papped without dismantling and with the simplest of maintenance equipment." Among the street of your supposes

## OVER 1.000.000 MILES OF FEEDER LINE OPERATIONS

link thousands of the ration's small towns into

a year network of speedy and sere transportation.

more miles per due muilled 28,000 hankings and take offs. Londs consisting of war materials

with both proceeder, military femals and mail demanded the semost in dependable service at

all times. Champion-Geranic Spark Pleas played

their vital part with comple-

upus success sa support to

Southwest Airways Curpo Davision innaparated an exclusive feeder line service for the ATC past 21 months ago. Its outstanding success, upmarred by accident, and with the sale and proves conclusively and deamsucally the peac-

In this operation Southwest Airways are deservine of credit to genuine pioneers. They

have foreshadowed by a million miles plus, the type of abort basi operations that will inevitably





CHAMBION SPACE BING COMPANY TOURDO 1 ONIO

INSTALL CHAMBIONS AND BLY WITH CONFIDENCE

## AVIATION'S New Regular Texture

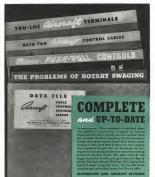
## FOR Better Design

#### NOVEL LIGHTWEIGHT JUNCTION BOX COMBINES ACCESSIBILITY AND VISIBILITY

A select by Harry Owner, Martin

New half-weight adopts purpless line: It was plantinged by Newly Cremes, Meeter supe plate, amplifus diffing accoming and wiving storing mendestors, also provides percental

AVIATION, Neverber, 1866



AMERICAN CHAIN & CABLE COMPANY, Inc.

#### FAIRLEAD INNOVATIONS GIVE BETTER-THAN-FAIR UTILITY



Fig. 1. Show how a migrabile hype helicited purched exacting, samining of propositioning for control coloirs despined of Carlin-Migrab expensed society state and assess allows the Aphinos Dev. N. James, Balk Montal et al., Aphinos Dev. N. James and Montal et al., Aphinos Dev. N. James and Montal et al., Aphinos Dev. N. James and Montal et al., Approximation of societies and the societies for an advance served by predictable of controls backets, and decident and approximation for the societies and decident and approximation for the societies and decident and approximation of the societies and decident and approximation and decident and approximation and decident and approximation and decident and approximation and approxima

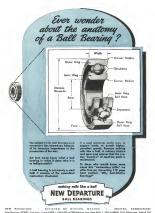
The limitages are impressor lawboth for serrors control cables have been broadle out at the Carrier-Wight Arphan Eliv, 2b. Londs. Over 40 these the second type, the other is a socied type. Each his second fraction and control area, and both are should in death, affecting rapid subjects to cable

The same type, many had present station of the charge, officing angle displane to the control of the control of

to the gath field of the offers for the special parties of the forester and the forester and the forester at one contemporary of the forester and the forester and the foliable of the forest the forest the forest the forest the forest the forester and the forest A. novel some forest forest forester and the forest forest forester and the forest for

cable and as particularly defected to bethe This lake has a some-passe empower. This lake has a some-passe empower and the passes of the passes of the passes of the sent in the between at the color of the term in whether the color passes are to memory. The color of the passes of the passes of the passes of the to the passes of the passes of the term of the passes of the pas

whiled in the side portion of the black and



chipted in organe a maning apersure as indifferent retreation of the yet when the Stoold the cable be smalled as as to be be brained. A spring observe thereing black in the ferrod for reteiner Upon in a decision out paymodated to the one and underside the black in opposite and the large out of the large "As to supply the same and of the large," A larger who the same results for a large large to the other and of the same special continuous points on two points on the large to the other and of the same points on the large large to the other special continuous of the above special continuous of the above the present of the decision points of the same points of the above special continuous of the above the present of the above the special continuous of the above the special continuous of the above the present of the above the special continuous of the above the special continuous or the above the



#### WELDING SIMPLIFIES JOINTS

Very cases provide to a specified design.

In 1970 the boson frames regularly to the specified design of the specified search of the specified search



AVIATION, Number, 1944





cally and continuously manualty the desired previous andenaminal by the hydrocky system. When the recolousest decretion, the stoke of the picture is shortened; when more values is needed, the pictus stroke is lengthoned. Nover to

conventional accomplater and unloading valve trustified when a coartest volume peep is used. The variable power is used continuously during flight . . . 2710 rate, Maximum hydraulic berspower action is 150 ha at 2000 year. The rener in

remove recovery to not valence from math VICKERS Incorporated 1462 OAKMAN BUBLEYARD DATEST DE, MECHERA

Provided by VICKERS

VARIABLE VOLUME PISTON TYPE PHMPS



department investig mentor to previous aswist and houseofter "Test" of ferromanus picity fits note now of natures latt, Fearings have in of conventional buildened, oblique, and



Propositions for all of a more on prior's meets are of A and E.





AEROQUIP SELF SEALING COUPLINGS AND HOSE LINES WITH DETACHABLE FITTINGS ARE STANDARD

ON ALL AMER AND BURY ARCHAFF,

A EROQUIP CORPORATION

ACCIDIO, MODRING, U. S. A.



Remain controlled Manchentr (2000/2001) mashing gar fraged of Bening 2.27 Signalactions in hopping gar about of Nervice Sensit Say, Wells Sold Of Say of speed a softended by packes of gars, and control feeling of them, Bull ay absorber of Sensit Say State, at well or exchange force on right decay, see also do



Ness wheal at titigate leading sport of Northrap ASI Black Holler, alreading leaque seasons A and shirting designs B Wheal polysoth bank and up high freelege G, with the spectrum being blaced by felling shows D and E.





RECONVERSION will not be a mere return to prewar production...
The use of new materials and new methods will increase the demand
for high quality Blacpciates delivered quickly at low cost.

PEASE BURPENTING ANCHINES will provide these necessary

Bloopeints in volume and on time. Urpacallabel in performance, for and economical in operation, by require loss attention and make shapere, clearer, more contrawy peints than any other tracting graphocalous machine. Frame Bloopeining Machines are noted for their speed (Pense "22", not illustrated, produces peints at 59 for per relative or more open and for their low-ous, quality production ... has points as flow as one case (are even less) per equate foot. PAMS \$198/BERG PAMS, for sur which are Illustrational for their periods of their periods

(Dry Dimer Process) anothers, are suiterally dependable for producing quality Baspiton, Blattine Pelco, Browcpelco (Negativas), Brownline Pelco, and Materia Whitepelco. Ask for descriptic eléctrolere and prices today.

THE C. F. PEASE COMPANY

THE C. F. PEASE COMPANY
2611 WEST IRVING PARK ROAD . CHICAGO 10, ILLINOIS

use Blueprinting Machines for all kinds of Iracing Reproductio

TATION, November, 1944





A, and Valenced top and history on inco, on all and C. Rail is reliable to, and half better alreages: will me place for attention to treat, one at Enthur of colds to all F.

Property of cell rafled smaller: No. 65 min.; St., 2 to 15: Ca. 5 max.

We see to G. He

three-counter hard and hard, depending used, entire birth ductifier on appear-,050 se, and thinner; Mn, 2 to 25 P, unfacative of working contents than .04 max.; S, .24 max.; Cr, 17 min.; Inherency specimens would be

## Estimated Weights Of Stainless Steel Sheets

Chronium pickel stateless steel 42.0 fb, per op, ft, per lock thick



HI to 176	5	171875	7 1157
HI to 160	9	15625	6 5535
HI to 161	90	160625	5 9062
HI to 100	11	123	3 15
000 to 114	12	926175	4 9921
004 so 000	15	09375	3 9572
073 to 683	34	079125	1 3832
086 to 073	11	0701215	1 9591
059 00 065	35	0635	1 635
061 00 668	17	06435	2 3631
067 03 852	18	_05	1 1
061 00 868	29	06379	1 8171
056 to 043	30	0075	1 575
013 to 011	31	804174	1 4455
050 to 012	22	80125	1 5125
007 to 029	33	80125	1 8153
634 == 035	26	605	1 Gi
6199 == 637	25	629475	-5147
6175 == 6296	26	64875	7173
684 == 6177	27	6473875	-7188
6146 to 416	28	015625	6863
6131 en 4143	29	0166625	3906



Federal Telephone and Radio Corporation Newerk 1, N. J.

ALIANION, Smeeles, 1946

of electrical instruments and other strengt accessories. This is only our of the many types of all-purpose power cappely units provered by Federal Selections Rectifiers ... suction example of Federal design and manufacturing leadership . . . and spether good peason why you

CHASSISSC ATTION SUBCLASSIFICATION . . . . . .

Stainless Shoot Stee Date gives in the table are commentee relict bond on tests of innatic fram-

TEMPER

D-25 (cont'd)

TREATMENT Yzazvene compounds (se buckling)

Street religions



-30°F

### High or Low Temperatures-

## There's Little Viscosity Change

Small change in viscosity awar a wide temperature sunge is use of several important properties that products are meniloble in two series, depending on much amplier them that of our known houses of

equivalent viscosity. mode and temperature slane of Type 232 Finds names of -30°T, to 215°T. Note the figs slope of the DC Daid This illustrates a observatement that has bruids one ideal for many precision instrument designing applications. BOX 192, MIDLAND, MICHIGAN DOW CORNING SILICONE PRODUCTS INCLUDE:



210'F

## Review of Patents

By A. HARRY CROWILL fundamental from

eventor developments granted by the U.S. Patert Office, Mr. Crowell will

Passware are durate of some of the of the such, furerly from U.S. Patent more extension proof aspects on Office Washington

**Book Reviews** 

AVIATION, November, 1944







## Never was there a day when it was so ratally important to the

The achievement of Eastern Air Lines in completion all flights 190% on schedule for 71 conscrutive days in the face of expacity loads and with dish flying time of every alrabate sknost doubled ever power days is a proced that in the worth of the New York Times editorial of August 4, 1944, "not heretofore equalled in communcial air transport history." With a fleet reduced 50%. Eastern has consided and con-With each Silverliner in the air an average of 14 hours and 7 minutes every day, Earners Air Lines mannenance men are done a greater, more important job than ever-

from peopeller to tail wheel tire. The results of this program have made possible a creat pure at surface history, the forerusteer of even recater pages aboud.

## AND THEY DID THIS JOB BY

## Check, Double Check...and Triple Check



Station Check. At the end of every year, Larrers for greened crews check engages, engage and frong reviews years are presented to the control of the control











RUBBER COMPANY ROCKEPELLER CENTER - NEW YORK 10, N.Y.



## SAFETY FIRST, LAST AND ALWAYS



SASTLY AWARD -- In 1917 the Newcord Selected workfasted the Avertone Salety Award for Bull

SAVIT AWARD -- Other worsh followed on sen in 1994 Eastern Air Learn was the National start Coupel Award for contracted or fine spens



### U. S. ROYALS ARE SAFETY-TESTED, TOD

Be test on Eastern Stheelingers, in service on needed to do this nursime job, "U S." go-

Linn to the Hillstraum-Symphony program new the CBS and need Sonday opherson, J 60 to 4-50 EWT Cod Fox flower and a gund aire present on marched of hadronic seguritories,

SERVING THROUGH SCIENCE

# The AVIATION

Need Better Personal-Plane Pricing, Safety, The Personal Abredit Countries of the Personal Abredit Countries of the Appendix Countries of the Append Utility to Realize Rig Market ... T. P. Wright at the Accompany has not only by

. Feners federablecal cooperation is program for magnetizing in incition deposit. folds . . ACCA shothers II.000 elegan Mr husbariles as become design.

folds . . ACCA shothers II.000 elegan beautits and construction of in-to-m
. Light place "gr-skeed" . De marpha-partiess introduc good place merbell . . . AMS fellowables . Registrates been being lifted independent will not will find

is ownered at 400,000 per that the or is ownered at 400,000 pery \$100,000 one is delivery rate of 175,600. combinations of price. One important step

deschilations of Civil Americani and the state of the type of the state of the stat none other a high degree of a high cut note would would overview. MFE Deser L-6 sefery and others have farer- authorize \$100,000 ages, provides that was compared.

Dainless expressed by Mr.

White entire! rate of 178,000 PREST PORTO OF INCOME.

Would constitute a cood-sized Secretal by War Beautreas in overst and facus; of propose backet.

d there are monty period local hunds, menty all for pri-planet anotheric so fined tone focus producters have not avoidable. Rep. According and had open written which to ed. Altreither period, Resolute has introduced both crudes returning military lat-form a high degree of a del 201 Add which would review. TWPS Degree Lat-



Consumer Property C-82 Parties is \$6,800-in-spec 3,500 microssy our

determine to William A M. hander Analyzed Secretary and a by sight in he hander Analyzed Secretary and they a treatment belongs of CAS, Threatment Secretary

Wingst school and South of to getting a driver's Scene. Award Silvenicy, Grapory
A and Scener and South that Committee your AMS Fellowships
The committee of th "Gozzafi Chermon .

"Gozza con, and a "worley in naturable industry has been controlled and the second outpoint and and noted beatward to be been placed and the second and the second



Perhan priented of news could be traffed in 18th Agreemental Products

bellospier", and he said a Civil Air-Put) fatissins

After a months hour bestcould's sublemple relay a Lakes of male male word through parties it. After a monthly-large battle topes in new Yerke's coming at States Fafer they not first you in [Max]. and GAA, the Indion Region assessed four arranged by Processed Perfection Gr., sales befolked from given observed of realisating them. MAMMOTH DIE-PRESSED FORGED ALUMINUM PISTON



receive a merimum of machinese. Revers forgraps are also available in cragantiam, cupper and copper alleys after box tension. In the non-war necial fewer respons of this one will place, passenger car and much use. Whose this time cames, mineralise

booklet Revers Marnerium Allers and the



many types of heat eschangers—nicously radii atom, oil coolers, beatom—a accomplished by bracine Alexander allow contribute strength and light weight, response heat conductivity and recetance to conveye on. The beauting process

provides speed and antifermity of production In the tabeler-core section dictured above, throwalled alarment totaling and Alexaabeet, perfocated to receive the takes, are assembled in a fixture which holds all marsfinally in place. Formace-bearing is then easplotted to give them into a right, pressurepiete unt. Other fabricators may emalor Sandoth bearing hand welding and become or combinations of all methods How the molten beauting alloy flows at the has of routest, forming a filet which bonds all parts securely asgether, is seen as the

Upon will nested you in adapting the brazing process to your products, advains on initial temperatures. For this help, write ALL SOVEN

CONTANT OF ANEXUES, 2182 Gulf Building,

AMERICA AT WAR

Aviettan's Communique No. 35 accuracy, on far, in got an

G. Seeling Seets, director at the of Billian response "Wight," bell bald ground

ALCOA WALUMINUM





RAC hearing bolts.

NAS atternal wreaching bolts. complete line.

war agreeat Japen cheefed restricted, have been control wire Office of War Information of presidents of favory Cold, But Separt D. says the Jape and the opposite that an inch more support D. says the Jape and projects of major and vision Our alrests and specific companies month. Our already next per particular of the property of the

the clock operations against Al American as the high back control broad straining of any Arthur States on the season concentrate their all flowin, heaving in Lancour, which pears of the season will be season to the season of the season of

\* CANADIAN NOTES \*

The state of the s Will be to be to be to be to be A C Herry Street or Vice Inches at the Control of t t chapters for a period of fir American Advilla-walls Are Vice Stocked. Particle, COLAYON, when the Arrived Statemers, give, of Eq-philic Colayon, when the Arrived Statemers, give, of Eq-philic Colayon, when the Arrived Statemers of Eqof Mag. 2 & Helland is named power Casalises Staffasty for Charlestell A. Freed, on Lance Span January has been

the Labor street for Labor, that

THE WASHINGTON BY BLAIRS STREET, STREET What to do with surplus combat abrolance to one of Washington's rural arrigan aviation problems. Tools

Nearly everyhedy exterred was pleased with the son-

Organisettan et a brood system of tracapartation to the thing discussion is one of the most difficult jobs, the known rang has pet undertaken If the Stranton

Bettles edds favor surface transcontistion to win.

The Stabblefold ever 6 years to Azony Public Relations Ab shows and oir roses will resume positive. And Character of Commerce is already magazine to descon-

the bood As for mose, the industry wants Army and Navy to be the dast-davids the Germani, growing weaker, conjume at prosition to decorate at Mility of a people in total war to keep an medication and fieldly under universeducted at

country, in Director's Town Name Without T. Grand, over, of the

Rig Assisgrat, despect of Assisgrate Amphibless, has beened declarable Pay Startin, Post Office already with Some Neural, compare you, pages name of Assisgrat 6, Majors Torontains Sen, has been named stembey of Sect Arroll Grey. New regarding plant in cardia.

24th are in question and is proving both assistants (1)% and send of figures below of James beyond the control of the send of figures belowed of James plant of the control of the send of figures belowed of James and of figures belowed of James and the control of the send of figures and the send of figures are send of the send of figures and the send of the send o



"Moms-Ask Daddy to Go Up to 5000 Feet ... And Find Out How Far We Can See"

Total in an "doesn weer". This is Mr.

INSTRUMENTS BY

STEWART-WARNER CORPORATION

Thus, Stowert-Womer will exceened

#### Aviation Manufacturing

will be eary. He said there first abroadt, and ear, it so proceed of enthance to place the stream, and our the A-90 invades and fide.

September Datpat is 7,598 Planes, Bowe 341; "Cattle authors orders, and elicitaires space to been shown the Mills of the Cattle Three Industry Puzzles

New ratherty are reported two as \$420's and ... Non exhibits are reported top as A-M's and (DOSMC) of DELETIONS AND Three Inchestry Panells.

After these industry smaller. Prepared religibles to revise the receipt smaller extends and to official smaller exterior residentia. Trelesis ask, but Controller Fire product out of the control Numerical variables product and 14,500 gast year. There are percent, heavy dairy tracks, 45 CONSTRUCT ABOUT PERFORM PROPERTY BY THE PERFORMANCE AND PERFOR non-more, was a mar on point statute properties in 1964 communities, 20 percent. Three principles problems and it. If water. Production for it is 1956 or foreigned from 1964. These were edged enough as first of the 2.5 killion, chair April 1964, 2064,

New Outbacks Reporteds Lags as Adria, Ditra emphasis of back wall reacted supplies on back with to the Loberton bonders, plus convicted gland at Hurtana. Where on a changes plus share order to 1687 \$-96 Light share that to council the history was exampled. Wer Debeloated in 1988 - per - month leady way for a new type of great for a workable confeat rate In addition to above place causes recently-sudered progrou extends on par con- rouge the European Section of Section 2 and a Section

The control of the co

Cesti in 144 WESTS NOW W-11 SPRING 131 to 3,842 by 1945 Tarbit

to the first and single-engine Win taked sales of 700 to not les sales at 270 h. We not organizate of outer then

A reduction of 1,345 C-47s art H. Himslaw, director of

An increasing Donald Moleco, Communication was application, with additional prices solding super-bomber product most standarding father per-indepants upon neterations of about 6000 however as for behalf expectations during a 450 P-40x The Physician are made to primarile places. These lengths officers in improve local measurements wheeling of compressions on the company and including places.



surplus perces to be confed greensteen of standards, a lesse or beredealde in benjum, and temende designed benness to Major effects





Of it is is not a sail of America. Budgeted to Josephina for providing the design of the America of the America



International Civil Aviation Parley Opens; tactic route applications were His company has endered 26 CAB Route Hearings Seen as Long Grind

started October M. Curitis CW-28 transports
31 will be meeting before tropparateled territor of C-eq
the Beard can dignet the large Commandes 

The Board will accompany to American-Grain, Switters All The United States tolk the times bearings on a huge outlance rates, under a pol. Item Annichtune in world are treme because of applications for my of counciled compening Fast-Control port offeirs when the Distribution for Expensations beings at compression comparing Penn-Distribution and Seventi port offeirs when the Distribution flag Section reads in secretaries with presentations. Last and some character ing propose Bearings away topporary nothin proposed filter the way, fast as it eld comes were completed on ally the State Department for in the St. Belland out of strong of supherions, to now Bearing and other constant plants are parts in clied as

I in Changer prop of pythodoxin by any filteration and other constantly letters and parts in their an Properties suggested in the first in the first an District state of the first of the to the state of th percentaged world for Stern Gulf and West Today and

The control with the Control and Control a O propose stable for the live size in true of convolution sound noneservity, therefore, Data. Accounts proposed proposed stable for the size in true of convolution for intelligental forther some stable proposed protection, belower, the size of the size in the proposed protection of the size of

seried that this order one

Overtracts for over \$60,000



New Army Silversky Melianters are questly soluted to other talls of

offer war it will respect the precessor form our being thus passinger faces one highways and release risting tokeneds of small formed Hearing, on the Al-third for than first class support toes to What

William the absolution control were no perspected in part party. Body and it here can belt made among report part of the property of the prope



THE TIGHTEST-SETTING

SMALL SCREW ON THE MARKET vibration will be encountered . . . plan on using Bristo Screws screw to the key - for convenience in handling .. and to utifue eventer wrenching force without damage. The Boats arrow can be turned for

beyond the point where an orderary screw would burnt or at least cound out. Sizes as small as No. Specified by leading aircraft and communica-

creased - this time by 25% - and further expansion is trical apphences, cameras, motor assemblies, instruments, etc. See other applications lated in

why Bristo Multiple-Splins Societ Set Screws are being

to specify the best. To accommodate greatly enlarged

ing pressures the key pulls the screw

regulater stated No. Inc Bought Offices bugges to begin apprecion of Tipe subsequent the Communications 20% by Man dominated CAB has appointed a 30. lettled that just designs als man addressy committee in most avariably full short in autial in a right on weekings at least one of these backs austat in a rindy on musiciple in tends one in trees to textually a far carriers, under factors—substy, upond, of the statementality of Beard [50], and one. Hence by

Details mespelale were pa-

olia messandia ver dell'acces time i on America Assistato Laier a paper lo Benry I sperimen for line are: Daneitas, New York Industrial 2000 THE PROMOTER AND A STATE OF THE PROMOTER AND A CROSS COUNTRY WITH THE PROMOTER AND A CROSS COUNTRY WITH

Perteat Pickup Plane

serve that North Arkatine.

A ferronding was prime by
control of the prime
control of the Further, United Alf toggether plan being to make high. PAA has common community reported recognition at 2 m age only when measurery for who makes PAI, on a would likely digital action the Park the accommodation of pen-serying, where the property of common personnel, and support Controlled to any William.

Moreign, and Andreits sleev 20. so provide for 12 passesses of particular language and begans, 2001 and on a contract the 2004 and on the contract of the contract the service paids, 300 fb, of theorem as contract to the Revision of the Contract of the Contract of the Revision of the Revision of the Contract of the Revision of the Contract of the Revision of the Annual Manager Stages 100 fb, of the Contract of the Revision of the Contract of the Revision of t

SAE Meeting Considers

these of Curtis CW-00 a and E F. Farton and Carlos Wood

which will limit added by the present offer unto, are sinker to taxable AAT opin

represent on the Alexander. New York Industrial the period Aug 198 to designer, contraded that his read before the Decision of As ATC Decision 5-34, received the Decision of Asta ATC Decision 5-34, received the Decision of Atc ATC Decision 5-34, received the Decision 5-34, received the Decision of Atc ATC Decision 5-34, received the Decision 5-34, received the

Transport articles get the management toold important became need to make the management of the Cost best and the management of the Cost best and the management of the Cost best and the cost in the Cost best and the cost in the Cost best and the cost in the cost of the

#### There's More to Stainless Tubing than Analysis

the fabrures stope Plus values services from long experience





THE APROX







Supplement Pearling already 55 ft per control feature above to the first per control feature feature





Protores at Accedenance Scoking

Acrodynamic brakens, another four by Carles. burgs to the sowers of Bald is new and satisficant descionment. The conceller long the season of forward theset on except, now premater though in reverse to reduce the landing rail of the saleshee security and Aeradynamic history, like many other feetures,

is inherent in the variable Curtus dealer

Carties Neight Corporation . Propelles Strapen



THE CARPENTER STEEL CO.

Send For Yhe Hanky Pele Folder con-

Apply these ofvanages of Carpenser Welded Soutiers Talang where they will do Cultum rule volls - so the same Eno to bend, expend, weld, our Each length 180% by-fronterculty Next Anny New Specificacoes Wide range of analyses, siere and



. There are more than 25 precision-made parts to the socrace Multiple Cornel Electrical Connector When ansembled, they perform their function-that of making or utmost simplicity and efficiency. Such simplicity in operation is the rad result of years of research, many refere-Circuit Electrical Connector referts in the efficiency with which it does its job, the experience which went into its production—the hackmound which has made Revere a knowing producer of many different types of strengt and





#### British Major Werring Ge Pontwar "Ga-Abenda

. Less to all party for throughout the world have charlifordies . "Selfo brandered British admiredcastinuise. Throady on the ere of the sir nime

I metter air afficials stated over proory and shouly the their Rightard was first in the supplicions artisting from the field and was installed to stay various souls afficial attourner-theirs, the information being to the questions of Periods' post-

quality, and British Sectories ... INTERNATIONAL BRIEFS ..

signation construction appoints New Jackets has discussed to been justiced by pro- widths to calett to Caleta big Asserting among construction in the Engine

uses eme 160 with Cataliène Zevaning à non-slip hight of 2,60 ml, the datamax admittedly in the Impure recularly admitted hop in the world. Do covered in syound 20 hr by the Catal which have self with a pose which if your 55,000 ls. locking 16.00 h of 3oc.

Persuages who have made the trip are indicated finds the "Sace and Secret Order of the Deckie Discrime" to needed them of the moor than the Joseph School Sacrime place service in to be incorposited with a four-regime are stone to be indeed as the "Kansaran". Learning has

WORLDATA . . . . . . . . By "VISTA"

Further details have been received on the new six positi

Air Tradio Operators these Availed Indicates the Claro is the beatschild of oil late currents Seasiation adopted at the first protect CLATO meeting!

1 That tird strips spectators shall resume dode activities

porticities to continuous of air transport consisted type esterition 3. That there operates should be enabled to obtain transports withdeast to strag their field on pre-wer levels. And 5. That the Terized Nations should set up a consistent with the nations operations represented, Charles there passed the sew Garnes plane as



# **AUTOMATIC MODULATION** by WHITE-RODGERS

White-Rodgers modulating temperature controls and Servo Actuators provide the safety of automotic local or receipt control and course arrester francism for the pilot in applications involving the control of-

> Cabin Temperature Anti-Ice Temperature Carburetor Air Temperature Corburator Mixture



Authorized manufacturers concerned with the above or similar applications may searce anal-

Corburetor Throttle

nearing data on request



WHITE-BODGERS ELECTRIC CO. SAINT LOUIS

reinne additional arrest

Mid-Castleret Airlines has The latter company has 100-seminated in Arms air coups 800 shares outsigneding, and it make restead in the Maddle in the intention of Ex-Call-O \$122.00E ACADMS \$900.744 In. Obc. Associates reports that a 000 with 16 large communical Air Association reports that a 000 with it make commer-rangeologies agreement to bends, according to G marke executed on operations barden. By, treatment restriction of operations before By Trailing The for the flowl pear ended Sopi lears, described as a V credit. B. 1942 reduced out public was alwayed to need extent where two per though the pear to be the second to be per the control of the contr It fills 64 or 54 22 a share company mercand to see as This compares with set he-croft with the busies from come of \$404.64 or \$3.22 a instruction on the \$130.0000 obays. In the preceding year Other large credits aspeciated No the industry memor one or Brewide Abrendt owns invo-E50000000 to Consultation tary materials valued at well Tables Abrard Corp and one mader 1000,000 decade value of \$120,000,000 to Marry Corp.

f \$200,000 000 in the first half f 1894 according to company Marth American Aviables, had Steinin of the big sincraft concesses to Northwest Alathes reports out connegs at \$6750 223 or \$100 overflows of \$577,000 or \$1.00 a s share for the formal year. f Employ of \$150 a share to \$179 kHz or \$1.5 a that of reserve of \$130,000 was no \$585,130,000 services \$552,000 company also in inering \$1000 continuous compand with shares at \$1.50 serverible \$1,00000 the previous year perferred stock of \$20 per

on July 37 year \$10.080.000 lintion from the one passed in Balai for the tides penathe 1000.000 sheets approved by code, Am II were stimbled and standarders satisfy this year analyst \$14.000.000 in the like was fer the purpose of powin-1640 period. Droblem's Nurthern Assents Byvidenin Sternoop Attenti Las desianted two dividents of Paper Alcondi declared an In-Se, tech on the A and B Elia ninemos, divident of shocks payable Oct. 17 and Hive a share payable Oct. 25. Jun. 3, 1945. This represends The empages, where evice has

a 500 chidanal in depletence the Strait Corps Totalized for white Seren Alternit paid a deer Included 1000 places for 13 distinged on Oct. M.

are safe in staining development in 15th legger before making any ndvince consultaneath for such lotted Tax Pedent Beneric Bank, however, has warrend benefit to be propored to make lengt members of these loans within a few words after V.s. Edu. Abline Euratous. The improvement in demonity welve-Abbies Earnings. The improvement in domestic melon-grafts that showed up lawards the real of the abound quarter was needersted in the third quarter to such an extent that made circles respect results for the year will be

Stock Market. Publicity gives to recent large equipment anders by several addition proved the stock that set off the

H distinct on One ...

De Arterior Composition is Manch. Accessed to Composition of the C

Each Arranables Cep. re. 1811.

Each Ca.O Cep. but reported port a recognition settle2072 shall of the Fact L. result for the vary result of the American Aviables record community of the State Community o



### RESEARCH PAYS a 30,000 Mile Bonus

Clean cut and double as a seas. Europe engines deliver Normally, engines in service are "pulled" for major overhand after 600 hours. But Rangers have consistently a Engage engine to reach the 990-bear check point, corried Responsivered places out through the regard cold of throughout Seeth America-and in South Africa. They do their field tob, sturilly, under all north of fold our-

The teeler cylinder Europe, for example-provided for weight recognity, imported for a better field of vecor, infine In use only on military planes today, Ranger companies on rials, better methods, better results—has made this Exager

BUT U. S. WAS SOMES AND STANFS





and the part of portion as Weight, has been shorted a

mount name emphase, he different and companional new accumes offune of all in change of operations for current editory take. He Foliated Expline & Allerians

excepted of Manage Mts.









Vert and heated M. Y. housestratums in Senter Could Mart Age 1250- Noors Earlier be served





AVIATION, November, 1844







Lucrobe to het beer at dutant district autors by











## ... for the thin skin of aluminum exide

thick, is applied electrolytically in an avadimin both To produce a avriefactory enide couring, it is neces-This condition is remedied through the use of General

OF BUT WAS BONGS OF

## Industrial Refrigeration by

GENERAL @ ELECTRIC

No. to Consultants in the Property of April 1995 (N. 1995) (N. 199



Each in '40 Magazin's enganesis gave has an expreshible adopt

# Chromium-molybdenum steel in aircraft structures proves that dependability

## KEEP POSTED ON Products and Practices

This selected information on new publications and products is offered by the "AVIATION" Render's Service through conservation with the monderturery. It hales executives over valuable time provides prefit through convenience. To althois literature or addifinant date on new products described simply \$11 is farm below. cile it to year letterhead, and mail. There is no cost, no abilipation.

Take Baroling Pressures ...... 100 Earl agreement secondary speed over poster for ages and modern posteron ad-read. Ball uses. Vital on additionally principle, in discribed in the books found by Migney-Thompson Corp. Long-inand City, N. V. Professor Spring Con Linguistre Scotland St. Conf. Scotland Co. Collebor Motion Plature . .... 11 Baccines Number California Produces Produces Incol. Williams Frod office Colleges Incol. Williams Frod State Colleges Incol. Williams From Colleges Incol. Baccombinet of the Colleges Incol. Physical Development Produces Incol. Physical P

Pewder Metallurgs

Leaking Santom Cetalog..... England a Mcallinar Softwood,

PRODUCTION before-find Process Consumers Heat Published Confirms

Embrace to bent, opposite and Allen Brench up of Walls for Projections, project or control Correct properties for pupiling delighted in Society, Correct Street Factor Society Control Factor Society Chief Society Business In also contains a like

AVIATION READER'S SERVICE 37 32 33 34 35 34 37 38 39 40 41 42 43 44 45 HEW PRODUCTS: 50 50 40 41 42 43 44 45 46 47 71 72 73 73 74 85 80 47 NAME

THEN OR ACCULATION

SUSAX PUBLISHED AND PROTECTION EXCENSIONS BATA ON MOLYEDINUM APPLICATIONS.

and economy can form a practical combination.



Description for the Community will be a few of programs of the control program

Norther Land Craying Indicate Description Land Craying and Land Craying Control of the Control o

Core of Microsofers

Designed to Intendent company a most
and Steep processing to the conmark to the control of the conmark. The first and Core of Microsofer, there
makes, The first and Core of Microsofer
market to the control of the control
of the control of the control of the
control of the control of the control
of the control of the control of the
EMP Market Microsofer Cor Tainte to
processing the control of the control
of the control of the control of the
processing the control of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the control
of the co

generate Andreas, Deel Never Intelligence of the Control of the Co

menter with Medicine was the Secretary of the New Yorks, description of the New Yorks, descripti

property (or obscapation with the minimum of the control to the control of the co

Machanica Engineering Co thin office divides density of spirit triing present in ma general of hardward pen grey haldge manufact, talk hardwards general per manufact, talk hardwards general per manufact (manufact) (manufact) in Palacking Mecchine (manufact) in Palacking Mecchine (manufact) (manufac

December to the Market of Street of

and the second term of the secon

A Common Marsen der Philadelphis

and Common Marsen der Philadelphis

der Steiner der Stei

South Roy Generators 44
Chairest Address and State Control of South Programme Control of South Program

Botteried text beide. 47

State 1 States and the st



After 24 haurs' immession in S.A.E. 20 ell, wick specimens (such 22" diams. x9" long) of six different types of Booth "prescription" felix were surfaced drained and then weighed. Oil absorption as high as \$15 % of the original weight of specimen was recorded.

independent laboratories, may give you new angles on felt. Als for copies of the reports. THE BOOTH FELT COMPANY SEL 11th BOOTH FELT COMPANY SEL 11th BOOTH FEED COMPANY SEL 11th BOOTH FEED COMPANY SEL 11th SEL 11th SEL 11th SEL SPECIFIC CHART AND ADMILE SEL 11th S

Booth

PRECISION CUI



WITH THE but when

....describility ... bish efficiency ....

were and rable.

Pelythese Playlic SI

E I defined as American Windowskies
Del sellers details from paper from Physical and Chemical Properties of Public Research and Chemical States Associated Chemical Public Research Chemical States Security States Security States Security States Security States Security States Security Se A B Det Ch Chairm of the Control of 

MANAGEMENT & EMPLOYEES Water Meeter ...... 55 Syrioge N 5 Mrs. Surv. Specialry Syrioge N 5 Mrs. specification Sinte come water health describes Mucr Compound ..... E. C. Horn Cr. Long Seniel City N. professor September on Factorial of Computer of Section of Computer Section of Computer Section of Computer Section 19 Computer Sec

Partial liberalism in social worlds

**NEW PRODUCTS** 

Latest Machine Tools



20004 CO'C Dayways providing ton

AVIATION, November, 1944

AVIATION, Namedon, 2004.





finant to be medid in existing indu

Get the Specifications On This Improved



electralytic capper, retrid at 100% consisteits. And - the entire in provides a strong grip on the With far fulletin UC-2, giving why the UNI-CESMP is stronger

over to the GNA CRIMP and speed H. B. Shermen Hfg. Co., Bettle Creek, Mich.



## THE MASS-PRECISION STORY BEHIND



Imagine a precision mechanism metericing, in "split intuls" necessary, which spending in enter file has been red in soliton fluid but mough to soliton arranging bate in a few minutes. Do Pint registeric possed this consumal meaniforcating, problems when they brought the designs of these first soliton pump to Nichola. Frenth wear, the sequential fluids pumbered before accepted markets.

recommends of a man Leaguing in Account and present on the second on OCOO's war specified, and the pump win to preside comparing the contract to the time their seried by make treas. Death, present and the contract the contract the contract to the contract to the contract the contract to the contract to the contract the contract to t

tological after profits in first base been colled "the most accurate mores this of commercial pasts over produced."

Here you a profits design whose densely ment has rea had a mean findaming reposed. Then it is a pile to discuss with "account." Blood of the Management of the other piles to discuss with "account." Blood of the Management of the other piles are not supported by M. MICHOSE & 1004, 48 MOREO ANDROY, WASTAM 24, MASS.

"Accurate" Nichols

PATEISION ENGINTERING AND MANUFA



AVIATION, Numerics, 2984



, Narosher, 204



Percula Crimaina Maskins . . . . .



Air Chark Adepter ...... # HOSE NOTTIES + SWING IOINTS + FOOT VALVES # EMERGENCY AND OTHER VALVES \* VENTS # PHIMP VALVE

LEADING MANUFACTURERS roz . . .

MANIFOLDS \* LINE STRAINERS \* HAND ROTARY PUMPS, ETC.







Pioneered for tlight!



AEROPRODUCTS DIVISION + GENERAL MOTORS CORPORATION + DAYTON, OHIO



SAVES MANPOWER IN AIRCRAFT ASSEMBLY

Our man deing the work of areas with use of only half the manuful . . . those up the methematics of one maversetile and fast. Research restings abow higher senblies in a wide variety of essenblies. If you are In addition, many costly operations requiring the use assembling or fabrication applications of Alaminum. of highly skilled workers are eliminated Marrison. Scaledon Street Physics Cook Bobber Asberray Wood Sciuters call for no special skill of any kind and mor Textiles - or are combiningers of these massingle quice only one operator. and Reserve to Marriage Systehesis. Write for Reftens. Ft.

. BUY MORE WAR BONDS .



Targer Wreath .........









stug cooling fron for bot spots such as endio tubes and of sircroft and radio installations, Competent enganeering facilities assure volume prorithed to your exact nectors. once specifications-for say job that requires compact, lants, dependable power, Tell US YEST DESIGNATIONS

Small Motors, Inc. Design - Engineering - Production

TRADE-IN DEARBORN GAGE RADICS SET

FOR FXAMPLE Original Set /#1-W cost \*385 ess 101 tradale





All to your adva

CANNON QUALITY CONTROL is our levestment but you collect the dwidends. Let's see how, We reall all margars to excremely close tolerances

You see the honeful of low volume door. We die cast firings. You gain suggeth and save weight. We osepeered the split shell. You (collectively) save hundreds of thousands in the cost of wining and assembly.

All along the line we take extra case in manufacture We not inspect and check again. You have the souronce that, whatever else may fail, the Carpon Place you me are depetable.

anest in your good will.

CANNON Coxeen Electric Development Co., Los Angeles 31, Cell

DP Connector Bulletin

YOU can now turn in your used Deschool Gage Block sens for reconall have the enclusive Distress frequenof Chromism Please Gazine surfaces



CONTROLLED

WARMTH FOR THE "OFFICE"

> FIVE YEARS AGO the first B-24 was slowly Taking shape in the San Deep plant of -Liberator No. 5000, complete with thousupds of autographs, has jound its predoces-

One of the many natountic devices that add and cold air to maintain a constant, comfortment and centrel room (known familiarly by airmon as the "office"). This Sylphon instrument as but one of many processful applications of time-proven Sylphon

A fully stuffed componence consultred service is available at all times without obligation to and Bollows Assembles,

No. 797 Sylphon Temperature Revolutor. This instrument

Inquiries are invest, both for post-war and immediate delivery. Builetin VA-822 describes

A new meets tilm-"The Story of Motel Bellows"-is available to interested

SYLPHON

**FULTON** 













AVIATION, Namedes, 1864.

# SPEED UP



-uitha GLOBE portable PLANE HOIST

Write for Illand maked half wife was a showfully save and spines of Global reach School for years and sand hole

From vicing "tilly women "on points in a locality, for environce of londing peer reliabilists now factor of the control of the long and the long of the long and collections for converse, armor, and convocing and collection for our GUERRE, and IEEE/A.

Sound today for Electrated cheeder on the full line of Guerre Prince Stefan, and the many ways in which flow can very yout time and Electron.

GLOBE HOIST COMPANY

E PLANE HOISTS









PEAL

Statistical N. N. -1 hair completes according to the complete of the complete

den internet autorite production of the control of



SELL PRISS NEAD, 150 Sell-SELL PRISS NEAD, 1



Soft Ferring Coupling 100 August 100 August



#### INE AND MUNET SAVERS

Swing Frame Grinders, Idler Backstands
using METALITE CLOTH Belts

The pressure for speci in turning out war ma-

terials greatly accelerated the installations of such machiness—Sweng Franc Grinders and Idler Buckstands, both employing fast-running abrasave belts. But long before that, increasing numbers of plants had reased the many benefits inherent in these

modern mechanical aids that do better work faster and at much lower costs than old methods. In some cases four times the output, in others at a reduction of 75% in time.

These records forecast further and faster adoption of such time and unony saving methods which could well have the promet statemton of all

mechanical and purchasing personnel.

We will gladly supply information on the equipment (which we do not sell) as well as on the specially designed Metalite Cloth Belts (which

Just a few lines on your letterhead







off, mover diver and steep chinds, thus freeing pilets and crew for being engineers are finding their to per thought on the kers transfer



HEAT TRANSFER PRODUCTS Of Cooker . Dos. Genelos, Desel Engine Cooling Scholars . Drivvanios . Nad



Contents, Eng. country in street





AVIATION, North of 1944

Tamores Compensate in new Soptim

AVIATION, Numeron, 1944



"YANKEE" Fine Mechanics ers to Tan Wrenches and fever Autometic Drifts to Bit Braces - have been doing the work they were demand to do, savine tiene, energy, seed costs on countless different jobs. "Yankee" sugereasty means faster and easier work, "Yunkee" quality messe dependable and panted perform-

their hit in the shops of war, see again available for the Order from your industrial supply distributor, or write North Bree Mir, Co. Drys AV 1345, Phills. Po.

"YANKEE" TOOLS

make good mechanics better North Bros. Mfg. Co., Philo. 33, U. S. A Established 1880

Louire invited

thirling often ark "How many miles do

would be about a 2000 th mashine, up-

they che that you cannot hav now. How

3 New FEATURES IN ZEPHYR ANGLE DRILLS



#### THESE ANGLE DRILLS RUN COOLER. LONGER UNDER HEAVIER LOAD



. . to inspect the home of TURNER gauges to Stome of TURNER GRUGE



Acres of expines for the new B-29 Superfortness Charoler-Dodge Chicago plant. This is one of the plants making the now famous 2000 H.P. Weight Cyclone sugine, powering the manusch bembers which are setting the nigne sun.

the test cell for enother test run. Then, sent to an which will clinch victory for the United Nations. call break-us runs of these Superfectness Cyclones City, Pe. - New York 10, N. Y.

100% PENNSYLVANIA AVIATION OIL

#### Fit As Its Finish





That's the "rating" for

Brian & Stration Grayle, are realed equation performaleaders in the field . . . Freferred power ....

based on the performance record of over 2,000,000 of these engines with their watch-like practicing



Professed Person, by approximations, by distribution and dealers, by owners and users year sturber, and remove of operation. Because of year after year of dependable service such represent over or appearen. We see now ready to help you pleafor passense producture of gardine powered equipment, took and applianers. From this point on a could follow-

South are ensembled. In addition the as much a reconstillibr of the average

 $F_{
m or}$  the side range of electrical storm tion lines feet, call your Graybar Man. Craybar Man there is ready to make speal responsibility. Why not take ad-



BRIGGS & STRATTON CORP., Minesier 1, Weccern, U. S. A.



Punch countd Punch in the ring, from the starting bell to the final count of 10 means the title. Punch in your air driven tools means more production, not 1 hur 3 shifts a day.

Be sure your air driven tools keep new tool punch permanently. Install a Norgern Lubro-Control Unit in the air lines, it consists of—filter, regulator, plus gauge, and the lubricator. The Unit knocks out rust and corrotion and puts punch into your production. It shoots clean, controlled, cid-auturated air to all parts of your air tool mechanism.

Automatic; starts and stops with the tool. Prevents corrosion when tools are idle. Installed in a short time—lasts a life time—saves the operator plenty, too. Sites and types for every purpose.

For complete data write to C. A. Norgren Co.,

Margren

reper surface proposation as non of the success line dis assisten. This surface reprinciples in such as imported, floring, but withhest proper obsequencing the first surface would be approximately hardened. The time supportant balls in the chain of proximal as pool surface, one by manuscal you is defined. (1) Thromough and proper you is defined. (1) Thromough and proper or the first surface and the proper of the chain of the chain of proximal proper you is defined. (1) Thromough and proper or the first surface and the chain of the chain of the chain proper pr

is follows. (1) Theorem's had proper in the control of the control

But note their interest was captured by house interested to a point or less and or less than the first of the present of the p

Intrument Vibration (Continued from page 100) the character of the pade, which are period that they are loss to make

agent and visite the mouth and some agents and visit replacement after loss service position. Accompanying are three photograph sharing the companying are sharing agents purkage getters of a Robustus and convenient line-errors mountage. You purkage getters to do not be superiorable that the companying of the vertical measure solven the table is sphrieted by the clientie moder or tright. Whatton cycles per accord on programma are above as techniques.

per similar are shown in facilitation of the period of table. It will be not FFR 21 that it is lower upon 1.50 oper second (approximating entered to per second (approximating entered to person and the second of the period of the period of the period of the second of the period of t

THAT OUR COUNTRY MIGHT Out-Design THE ENEMY



Here, behind RESTRICTED AREA signs, Cartise Wright is constantly developing new designs and modifying current models. This as the major precept of the huilders of military sizeraft . . . . pergetant, unrelenting moureast

While this endless research and experimentation centers on increasing the military performance of Carriss planes, it has a constructive side too. Many of these war-horn advancements will have a practime application, when an airminded world takes to the skirs! Look To The Sky, diverses! Cone-West Learning, Indian Debto, Bellin, N. L.







U. S. Navy's Grumman Hellcats Poised for Action



be measurable. The standard mount, ritts. This was accomplished by autor however, undeates a very perceptible ner neumi or 1,000 mm. in a very im-

#### They'll Fiv It-Foot

Province of illustrates the problems as-

AVIATION, Navember, 1844

Here, the seed for orderates re-



# RELEASE!

· In the liberated countries of Europe, Festering devices of all sortsshallow of the Investor's who also Dirett. Abet - setting Mechinery, Phillips recessed - head Screws - ere

eviation industry is meline pleas to enterord predection especity. Knowing your feetening require-ments NOW will help us to serve you





bits the assembly yet. This are we sell attained foreign, there substantial expension as the control of the property of the control of the property of the control of the property of the control of the

November, the design of sents a fee being and the sent of the sent

With a proper cut-up that would have been exhaustle from the issue falled or Annaber difficulty experienced as the same place of the continued of the continued that continued the co

defined which police, by the saless of defined with a block of the blo

arca, became common, the turntime of such alternal in the depot w AVIATION. Nevember, 1944



The stawkess elley entires that come to you deen the Acme foundry are tested entires—put through every form of unspective and exemination known to modern metallicative!

X-ray trapection gives a clear and necessaria picture of the confing's internal structure. To merman strength, loses form every milt are pulled to the breaking point on a tensifimelries. And the completion of our spectographic laboratory has put at our disposal—and yours—the nevent adversements in the scientific matters of allow mobile.

Because of their recurricy and inherent quality, assured inour quality control, you will find Acuse Costings require less matching times, reduce your cost per fisheled part. Your customers will get better performance form parts under from

The special educators of Arme Castleys should help you speed production and reduce costs. Arms nagiscers will be glad to submit recommendations, without obligation.





Dowel Pins

# Polished precision-ground pres for accurate locating of works toler-

sace Bleer, 02027 over basic stre (with allowable telepage of 40015). Monthermically in the class of ALLEN Hollow Scorwa: - made of the same

Tracile services measures from 240,000 to 250,000 lbs, per sq Inch. Plan won't maskroom when driven into a right hole, - the name surface before extremely hard, much a copy of the might hardways to propose distantnon. Here's HOLDING-POWER for tool and dis assembles under

THE ALLEN MANUFACTURING COMPANY

shown at right.



to an average of right days. The tradeur

It might be well to pand out here one

Hircraft Quality" For the products you are now

slacers, you should know about their perswar products A new engineering production These gears were developed to

5225 So. Western Blod., Chicago 2, IE.

For explice angles of every size.

Which would' point the light

he applied to anser product. Wrose for your copy spikes.

DEFER YOR TRESE 5 ADVANTAGES

\* EREATER HEGRARICAL EFFICIENCY \* DREATER COMPACTNESS

. BIRRER SPEED

\* DEDUKTION IN WEIGHT \* EREATER BUILTNESS





demands of high speed, compact-

amounted to almost theoretical

plants, these genes are being pro-

Bess, corineres and production

mee, offer manufacturers a new







Party Parts Cont. Ann Harrist Convincent \$121.5 Trainer Blod, Change 5 18 Days 6









the cell research servings or gather studies on a measurinariang the complete conflict. The sea bandles will be ablumped to the complete conflict. The sea bandle will be ablumped to the complete conflict to the complete conflict to the complete conflict to the complete conflict conflict to the complete conflict conflict desirable conflict conf

soon of manner moderny has to be such, it too, isloud he savaluhed? Transplanted, and the same properties of the same properties, and other courted decision for establishmen and classical extension of the same properties. It is also to be such as the latest to be such to the latest to the latest to be such to the latest to

If the orders proposed fore were experimentally as the control of the White distributed and when the control of the data required with order the control of the data required with order the control of the data required with order the control of the control of

altood is shook, effecting an issue relimited a subshallout saving an embriedal critical interferous flow for which all critical interferous flow for which the common security of the common security of the common security of the complete of the complete in the conference of the complete in the complete in the complete of the complete in the complete insurement of the comtraction of the complete in the comtraction of the complete in the comlete insurement of the comtraction of the complete in the comtraction of the comtraction of the comtraction of the comtraction of the comlete insurement of the comtraction of the comtraction of the comtraction of the comlete comtraction of the comtraction of the

Street Lightweit Tehnler Steel WORK STANDS Safety ... 1557 Dayban Sirved, Loss bisarchy S. 2-500; --0015; Landaudo, Col. St. Lock St. Philo. De S. FEMALE SPIES Yes, we employ "Semale fe. They make more than 11 ricid burneybone of Pines.

MINIATURE Precision BEARING

AVIATION, Namedon, 1944



## Name Your Size, Shape and Style

Never before has an industry faced the rapid changes in specifications and materials which the aviation plants of the United States have experienced since they started

the United States have experienced since they started building cariel equipment for war. Wholever your needs may he, you will find that oil P. S. (for Pressed Sheel) Carburtsing and Heat Treating equip-

ment is cheered of the finness in such products and
May Educate Manifelds
Alby Educate Manifelds
Alby Educate
Alby Colon
Annual Colon
A

Betterpie Foleries Takes Widel Alley Takes
All of them weigh less than the ordinary—thus are more efficient, more economical, more equity installed.

# The Pressed Steel Company

FEARCH CPYREES
Frond Et. Sintim Edg., Findedalphin
Six Cortin Edg., Dannier Edit Richales Edg., Teledo

estigators dealers, would writing the

## Beam-Approach School

on theory of their sale resolution. They were been seen as a second seed for the seed of t

constant twist and are under constant characters as to subability. It is by the the linears and mean modeline neuron new green Lask constructors in North Associate the United States AP has not student to United States AP has not students to Description.

### Mexico's Opportunities

referred to the best of the analysis of the second of the

to the sixth running carrent.



TARROW Names and

275



Provious experience on a lesser scale had indicated Compared with previous environment, the 179's don-

Operating Department to mountaining the court Asset After the war, Collins will again speculare in the

communication engapement for commercial sylution. the world. Collars Radio Company, Cedar Rapids, Ia. \*The Colles Arbetsee is a reportioning muchanism which Webset going into details or statis

DESERVES TO GET NAUGAHYDE FIRST?







"U.S." NAUGAHYDE **UPHOLSTERY** 

Serving Through Science UNITED STATES BURBER COMP



## Use 3-M ADHESIVES

the sourceder of ejecraft parts. 3-M Affectives are designed to recent setting but measure their flooble, reliented qualities undeficitely tics and personnel have developed farmales that are describing of rest, we'll heald one to do the job. Mital the compan below for



Streams of get and of inchines the

All coal and connected system wi-

AMONG THE TO RECEIVE THIS SIGNAL HONOR! WAS DEPARTMENT ARMY AIR DODGES Sables - Quality Overed Charatelessics w. a some we romes of the Control Rating of the road Quality Control Rating Note of a Support State of the "The saw - Neywork Credit County States at the County of t official experience of conditional by subject to the surprise of the surprise According to the control of the cont supposed from the amount of the forty supposed for the forty suppose 13 the friends The second of th de restricte and families from the state of Signs with the company when one we don't then the them the company of the company wall would be desired to the second to the s el the product. the Property Specially



Short Cut Fastening Method can be used!

Choosing the fastrates: device for use in the oversion. It should be settled now, while the areduct is still in the design state. Too sours products are tested starts to really question factoring methods. This forcarently leads to recollers expense, troublesour delays, You will want to use P.K. Self-tounder Screen whereever nearly, became the observat featuring section Whether you are working with light or heavy steel, A P.K. Atrockly Engager will help use plan alread

HIRE'S HOW I A LABORATORIES PLANNED AHEAD FOR ASSEMBLY SAVINGS characteristic regions and try reports, and the need for moral inverse As a cough, malding and macrably nee feature, resist better and featureless hald with depositell as when you would like last to call, or send details RELPTUL GUIDE - FREE



The PK "Corts Gards" is comment told of lefter-marine on where and hose to one P.K. Self tangent





Let Aeronca show YOU how to get ready to do BIG BUSINESS with a SMALL AIRPORT!

Do you want to get mits the seal movey enabling --- year own hose-resolve over OWN ATE-

seall agree, to when sad how to sell Acresca. Aeresca's comblete dealer program is based on the personal place field. It can start you, as it

MAIL THIS COUPON! GET THIS EQUILIT NOW!

Al Brown, Donner of Subs.

FLYAPPING SCREWS FOR EVERY METAL AND PLASTIC ASSEMBLY AVIATION, Number, 1944 AVEATION, Numerico, 2044



An Engine Stand That Meets Every Requirement of Full-Speed, Full-Time Production · Designed for one with interchangeable mounting plans for radial

COLUMBUS. INDIANA. II. S. A.

not subseed off into mattery activities for, while Messgo is affect in all was

For example, a notive of the United DESIGNED to Status randing in Mooto must, before deliver the GOODS



STANDARD CONVEYOR COMPANY is able, through long experience, to specify and build for a diversity of handling needs . . . A processes of products, of the wildngte had of correying equipment to

With an pervalt serelation of some STANDARD CONVEYOR CO The range and venerality of Standar







Cord point training in 100 nervent

please available is cutting less than do



# 10,000 THUNDERBOLTS!

Republic firsts in war point to firsts in peace

## REPUBLIC @ AVIATION

Spanishish in High speed, High albitude Altereth

ATIATION, November, 1944

Curtiss-Wright Transport

to consider materials. Write for building, Amazo Metel, Inc., Deat, A-11, Milwoukee, Wiscensin.

Nowhere else can you obtain all of these benuius, so enimme the salability, performance, and errotation of your product: Togisteering and produc-

- - re malament elley at steasy cardecided quality, here everyood, sell-raytoland service of win-

To pratect your praduct against costly failures due ta

we a practical resource. A sense of engineered at

6 of field engages to resist 3 Quality control to held 7 A record of proved per-fermance in hundreds of

Devenified production to A autoral reputation that place oil the commonly used makes Ampen Mend pure

Send to your acons when you are coady



setting on solut's cable, arrignmenteds.

Printeger sents are agranged in page





Alarm Sanden (SS) we haved to believe non-sales of stabilizer

Above Planton was of for had show few foliator were upon press.

Nazi V-1 Romb

(Continued from John 1811) reds in writed to the role. If in specific









Specialished in reday's war production program are the hardened and precision ground parts made in great pures, which are being made for 100-flight aircraft extract even and other martrial of our are freshed to within figures of two ten-thousandths of an inch. Projected ieso the posterar pariod, the facilities which will provide a deep seservoir of conformather, mass pro-

If you are planning a poerwar product, and are looking

for a dependeble, economical source of tools and hard "175 AN ALMS ASSESSED" ... After Products Communicate and an drive class National Residence and Victor Production in Taxable and Militalia.

### RPORATIO

Presenting Officery 4444 Invales Ass., Detroit & Michigan. All Four Plotts Nevs Added Stem To They Army-Henry "I" Pour-on

AVIATION, Normber, 1944.





pack skyremeen, track coolers must be explanered for lead factors and service readilises. Bell race and have . . . firk and king belt . . . ande and trend . . . every part of a Bond Track Course is engineered with need the right information to make the right relection ... and you'll

SOND FOUNDRY & MACHINE COMPANY, MANHEIM, PA

RUCK CASTERS

#### OUT OUR WAY



SPECIMENT is a white, granular substance that's thirsty for all and grane. Spread by hand without interrupting production and easily accept up with a utilif leach, it reduces parar-labor to the minimum and saves the cost of expensive scenting expirment. At the same time is those a better bid, because it their other in the same time is those a better bid, because it of their

the roll and greate... even taking out years all deposits, in time. No matter how greatey a floor, it becomes slip proof the minute sit's SPEED SHITCH. This cuts easily secilousts, sown associates, and speeds production. In adultion, SPEED SHITCH was well as these from ONLY, heighters the plant, and improves merchanters of the second state of t

facts . . . and a FREE SAMPLE.

SSPHISSS. But - Bellows beloning Co., Her York I, Her York.

Addrest & South - Mercity Petroloop Penders Co., Philadelphia 6, Pa.

Wast Coast - Mesch Petroloop Products Co., See Mile, See Provides 6, Calif.

SPEEDI-DRI
OIL AND GREASE AESORSENT

OIL AND GREASE AESORSENT

we gold agent the real values and air intended sent the condustriant channel from the values cope to their probable too, the tight of look right the six as common and the common and the reason as realistics partial their reason as realistics partial their reason as realistics partial their reason as realistics and their associations. Once a combolation is intuited the subsequent surpris are fixed by the temporature of the right and their temporature are surprised as the six and their probabilities of the six and their state.

a resultant combotion rates the finpresence developed that on the treat
in the property of the control of the contraction of the control of the control
one. Therefore the products of concent and only assign from the star and
the control of the control of the concent and of the control
one as the interest insummer drays
that on the fine control
one as the interest insumer drays
to be a contraction of the control
one as the control
one of the control
one of the control
one of the conone of the con
traction of the con
traction of the con
one of th

ordine ges
Albreagh the Berich description of the
submissive poles may there are there is
submissive poles may there are there is
poles influent and the poles in the pole
poles influent int only his true. Since
there are no subcome to operatus, a third
grow might be associated unaccessary.
The writer has been field that if the tergrows are pilities at the proper single at
might be possible to claims the load or
covered which the flying both obscussiv
has.

But gives contrain the midder and him
has a which womand in the case which
we would be considered.

wealt provide the name of patting the control on course and there can the a control whole can be not but whole can be not but whole can be not but whole can be can be determined. The elevative is appared from the pattern of the control of the con

This may have been the generating ablined resides. Collection with p to be in orders. The generating area of the property of the collection of the collection of the collection. They appear to be discussed about a four monitor of short like discussed and the collection of t

most has been obtained.

There is much speculione as

as that ofference in determined. Since this has been for forced determined that Austor's theory in that when the arm presence that the beath Apil. Dadds are presence that the beath Apil. Dadds to the control of the control of the control beath. Since we is pure when developed to some does like model could be seen and the control of the previous complete and the control of the state of the control of the control of the value that hands in control of the control of the control of the control of the way that when the control of the control of the control of the control of the way that when the control of the control of the way that when the control of the control of the way that when the control of the control of the control of the way that when the control of the control

For money prepares, there is a volume or the beamen of the contrast plane are not to be beamen of the contrast plane are not to be beamen of the contrast plane. The six operated by a market plane of the contrast plane of

special at sheld. The implicate scares was the street, that income statistics of this popular content and the street, that is not the street, the street and the street and

#### Snow and the RCA

be fewered to the surface and and of the deng II this has it not it will apone our sections of the dar to racking of the reliters. As angle tone dengs receipt, who are duce the compacted move, and AVLATION, November, 1844





### QUALITY-"Like a Jewel"



Manufacturian Hole-Krome Internal Wrenzbing Bolts by the Hole-Krorea natested Completely Cold Foreign method is more then a more production inh. well done. It's a quality process for a quality product. "Like a Jawel"-on appropriate expressize used in describing "Holo-Krome Quality" . . . . Halo-Krome. from the first, met the quality and procision requirements demanded by the Aircroft Industry for Internal Wrenching Egits. Holo Kroma is proud of this responsibility . . . For quality and receiving in this better fastening method, specify "Holo Krome". HOLO-KRONE Fostering Engineers evallable for Consultation.

TEORD 10. CONNECTIONS

Instrument Overhoul

"Fast Freighters" of Factory, Terminal and Warehouse . . .

### CRESCENT ELECTRIC INDUSTRIAL TRUCKS











### WILEY BOOKS IN AERONAUTICS

Every day sees new developments in Association for which was nonfor new dawsonic. Make year selection and order today from the

counce below MANUAL OF AIRCRAFT LAYOUT

ALEPOST THEIR STEELS METEOROLOGY THEORETICAL AND

CENTERPORAL PUMPS AND BLOWERS AIRPLANT PROPELLES PRINCIPLES Suppler lave delps deery, sentractes and

tine-ment special and metals explaining DEGUPATIONAL ACCIDENT BASIC AIRPLANS MECHANICS By Hany H. Johns and Jenes M. Drown

Enthroside of the species would be been selected to be a AJRCEAST ENGINE WAINTENANCE GASE AND USE OF HAND TOOLS Shores and what about to take in booking and what and in his series and in the serie AMERICANE STRUCTURES-DIS ESTINA A good for the timing of markins along on markins. Treasure factorial markets in a time condition the professional way by making of time leaves and name.

ADMIT MILET & DOME, Inc.

ON APPROVAL COUPON 

AAE. In addition, this department has

### Airline Financina

believes, would not be appropriate for that

### Cantinuous Beams

AVIATION, Navember, 1944

MODELLIX COPPORATION 4916-22 W. Grand Ave., Chicago 39, III FIGHTS MANAGEMENT OF PERMANENT MACHET STRAME TRANSPORTS





Bhalestone problem No. 1. Assume a minimum beam loaded as shown as Fig. . The respective no consideration and the osciolar of distance,  $E^{**}(0.500000 \ \mu c)$  is constant. The same of shorton arises according to the equations:

These A to E  $I_{A} = 1.500 + 12^{\circ}$   $(1 - a_{A}I_{A}^{\circ})$ 

Prom A to B:  $I_1 = 1.50 \times 10^{\circ}$  D =  $_2$   $\times 10^{\circ}$ Prim C to By  $I_2 = 11.25(1 - 4.30)^{\circ}$ Recented: Convoic M<sub>1</sub> (a) Assuming a constant of the second second of the second product of the second forwards while the below for the other Rep. 8 Solution: Prov. (b) — Convoic f. As inspection of the beat inflacted. Case 2 Second of the convoice o

( (a), (b), and (b) as follow = M<sub>s</sub> + 2 (a + 0 M<sub>s</sub> + 4M<sub>s</sub> - 4M<sub>s</sub> - 2M<sub>s</sub> - 2M<sub>s</sub>

 $W_1'' = -3 \times 12 \times 63 = 363 \text{ B}$   $W_2'' = 12 \times 30 = 368 \text{ B}$   $W_1''' = 4 \times 4 \times 30 = 96 \text{ B}$  $U_2''' = 4 \times 4 \times 30 = 96 \text{ B}$ 

- 189 + 37 = 18 m\* - 180 + 37 - 78 m\* - 11801 - 97 - 78 de\* - 11801 - 37 - 78 de\*

$$\begin{split} & = \frac{1.3 + 11.39}{2} = 0.236 \, Z_1 = 30 \, \mathrm{m} \\ & = J_1/J_1 = 0.005 \, , \alpha = J_1/J_2 = 3 \end{split}$$

25 + 700 - 43000 2 2 - 30 147 - 300 147 - 1000 70 - 100 147 - 1000 680 - 100 147 - 1000 680 - 100

4556A - 50,500 + 800 + 90 - 18,500 and Ac - 2,601 pt. Ac.

This (No. 1) for soil (Mo.)  $(M_{\rm c} = 10^{-3} {\rm GeV}_{\odot})$  and  $(M_{\rm c} = 10^{-3} {\rm GeV}_{\odot})$  and (M

 $-30 \times 26 A_3 + 14 90 + 6 30 = -120 70$ and  $H_4 = -1716 \text{ yr} -25$ (Assert = -9.04 (Ar)) SUB-ZERO
Temperatures
Temperatures
Temperatures
Temperatures

One of the food includes the Nazis nocis in developing their cony aquipment was to indeventions, bus limits cold of the Nazion vietne. Motor lathicists, bus limits to feel and hydroidic connections, and other comment comparate had as been deligated for the type of switch. Libraria, our cover's before we selected the war was not appeal to the stray high childred is which mony credit before how been fought. There is not an exercise or of determine the effects that the property of the selection of the effects that the selection of the selection of the effects that the selection of the selection of the effects that the selection of the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection of the selection that the selection of the selection that

of extreme in freeperature, pressure and hundrity—a properly engineered test chamber in which any little of weather from that of the tropics at sea level to the stratesphere may be displicated at will and in accordance with slove finding.

KDED-HOLD MANUFACTURING COMPANY 446 NORTH GRAND AVENUE, LANSING 4, MICH.



KOLD-HOLD



There's pieces of resource or the file of DLAPOVO G. From rackets to reduce, clocks to reasons, "Controlled Tension" Damond C Lockwalters and Hat Weslers surve throughout the world... in was, indicately and colonial.

Distanced by defined management... (phrocated, executed.)

Benambler . . . modern high-speed productives some EATIND DELIVERY of pure orders at all favors. If your problem deals only with metal wishers . . . or if it reacess design, have twenting, stamping on fabrication of small motal parts . . . consult Garrent engageres indep. Write or phase, for prompt, fathisms envire. Write for phase for product, administrative for Traver 1 is produced by the October "Discount of Travers" is produced as the Control.

GEORGE K. GARRETT CO.
HET CHILDRED ID. PASSAGRAN L. R.

DIAMOND 
PRODUCTS

Summary, Approximate sorbal,  $M_{em}$ —QAH (Logarino) 5 percent. Summaria of Percent, Percent of <math>Percent (Percent of Percent of <math>Percent of Percent of Percent of <math>Percent of Percent of Percent of Percent of <math>Percent of Percent of Percent

 $M_{s} = M_{s} = 0$  (Ne and Strip)  $M_{s} = 0.0M_{t} = 0.000M_{t}$  (pack. in) Hence  $1000M_{t} = 0.000M_{t}$  (pack. in) 0.000000000 (iii) (-0.00+200000) m 2.0000and  $M_{s} = -0.0000$  in to additional new

 $\begin{array}{ll} \frac{-d_{s}}{d_{s}} M_{s} = -2 \pm 0.00 \text{ is do additional norm} \\ \text{Consect} = -\text{That } O(1) \\ \text{Fig. } (\text{Diss } 100) \\ \text{Eq. } (\text{Diss } 100) \\ \text{Eq. } (\text{Diss } 100) \\ \text{Here} \left( 100 \right) = \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} + 2 C(1) \\ \text{Here} \left( 100 \right) = \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} + 2 C(1) \\ \text{Here} \left( 100 \right) = \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} \\ \text{Here} \left( 100 \right) = \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} \\ \text{Here} \left( 100 \right) = \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} - \frac{d_{s}}{d_{s}} \\ \text{Here} \left( 100 \right) = \frac{d_{s}}{d_{s}} - \frac{d$ 

Symmutry Approximate Bettool seg-(Bill) (ensured bill) method seg-(Bill) (ensured bill) in a large pass and seilimitation or oll over pass and seicest of sects as an problem 3, but died in an Eq. (a) Armenter, section 3 in a cash pass equal to the reflection mean of the red Ps, and (b) where the control of the section of the section of the control of the section of the section of the control of the section of th

 $b_0(Y) = aV_0 + bV_1 + bV_2 - bV_3 - bV_3 + bV_4 + bV_4 - bV_4 - bV_3 - bV_3 + bV_3$ 

Dissolution ( $g_{1}(1) = 2g_{2} = 2f_{2}^{2}$ )  $g_{2}(2) = g_{2}^{2}(2) + 2f_{2}^{2} = g_{2}^{2}(2)$   $g_{3}^{2}(2) + 2f_{3}^{2}(2) = g_{3}^{2}(2)$   $g_{3}^{2}(2) = 2f_{3}^{2}(2)$   $g_{3}^{2}(2) = 2f_{3}^{2}(2)$   $g_{3}^{2}(2) = g_{3}^{2}(2)$   $g_{3}^{2}(2) = g_{3}^{2}(2)$ g

 $\begin{array}{lll} \text{Finn} & \text{problem} & 2r - \alpha = 2, \quad \zeta_1 = 000, \\ C_1 = 1[4/\sigma = 0.10] \, C_2 = 200 \, C_3 = 400, \\ \text{and} & \alpha C_1 + \alpha C_1 / M_1 = 0.002 M_1, \quad P_1 = 40, \\ \text{and} & P_1 = 30. \end{array}$ 

The beam-names C<sup>\*</sup> and C<sup>\*</sup> served be statical from the curve or Fig. 6 but must be computed by mean of Eq. (32) in the appendix, which is denied by sufferential integration. By So. (18)

C\*, = \$2.0006, \$3.5 (\$\tilde{x}\$ + \$\tilde{x}\$ by log \$1\$.)

All Names  $A = (\sqrt{2} - 1) (R - I_1) C_1$ . To obtain  $A = (\sqrt{2} - 1) (R - I_2) C_2$ . To obtain  $A = I_2 I_3$ , and appropriate the state  $A = I_3 I_3$ , and appropriate the state  $A = I_3 I_3$ . The  $A = I_3 I_3$  is  $A = I_4 I_3$ . The  $A = I_3 I_3$  is  $A = I_4 I_3$ . The  $A = I_3 I_3$  is  $A = I_4 I_3$ . The  $A = I_3 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_3$  is  $A = I_4 I_3$ . The  $A = I_4 I_4$  is  $A = I_4 I_4$ . The  $A = I_4$  is  $A = I_4 I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$  is  $A = I_4$ . The  $A = I_4$ 

Figure Q.\*\* a = 3/2 (spin):  $\log(-\sqrt{k} = 0.5)$ ;  $a = (\sqrt{k} = 1) = -0.2$ ;  $\log(.6x + 1) = \log(.6x + 1) = \log(.6x$ 

(From Eq. 16a) 0.820  $M_{\odot}$  — No. 6 (Trick) (27c + 40 (270)), (6 16 ft - 210) and  $M_{\odot}$  — 20  $M_{\odot}$  — 20

C) = 1.001 (4) + 8 log - 24 (6) (6) (7) + 8 log (7) lo

 $\begin{array}{c} \Delta \delta \delta D \left( A^{2} - D \right) \log R \\ \delta A^{2} \\ \delta P \\ \delta$ 

 $C_{ij}^{(1)} = 25000c \text{ (sill + 1) log } R - \text{ (i.i. + 2/c) log } (Aa + 1) \text{ (iii)}$  AVIATION, November, 2846.

OUICKER KNOW-HOW for new workers



THE ENOWN associan grape of less associates in

### STARRETT ACCURACY



b placest that before is but one maned the respect and confinence on the names of Security Amelian these who in colonally important with securing faces on the last before meltity and with scholing depositability

ATHRE MASSAGMESTERS VALA "STOCK" FORMS and SYSTEMS For Your Bookkeeping Department,

> A Complete Service for Declaning and Producing ...

. CAPRON INTERIENVED ABILIOUT FORMS .

. DISTINCTIVE ADVERTISING LITERATURE

The REYNOIDS & REYNOIDS Co. DAYTON, OHIO

 $\left(\frac{C_0L_1}{L_1}\right)M_4 + \left(\frac{C_0L_1}{L_1} + \frac{C_0L_2}{L_1}\right)M_3 +$ 

sets (57 + 70 \$2 - 20.70)

 $C_n = \frac{1}{D^n} \sum_{i=1}^{n} X(S_i = X) (AX)$ 

Accessory Soles

AVIATION, Number, 2010

The personal factor is realizely tacking from each curfus. This takes is would

Nomourophs Facilitate

6-70 m 90 days

F = 1,500 - V -1380 - 022 - 1468 C-0 - 66 dag





20600 CHOOSING YOUR GAGE SOURCE

Franklic Gages public of moking

DITEOUT 21. MICHIGAD HONE University 1-0370

### Precision Stamping



the Plants of the Metal Specialty Company is a background of years of experience. This experience combined with an Engineering and Devianing Staff of the highest calibre assures you not only the finest in Metal Stamping but an efficient and authoritative rvice for your specific problems. Metal Specialty serves Industry in Stamping, Coin-



Behind every metal stamping produced at





AVIATION, November, 1864

Personal Plane Instruments

tion will not be dur to he shirty to fy

hoder this with a 20 or 300 or radius. This place will have a company, other class, plat an automatic who be bought for long than \$600, ecomology In arrang or these classifications we

AVIATION, November, 1944

romagnesis, there is note a difference of gyro and an attends redecate. And

(Continued from Page 533)

If the light passe manufacture, and on Hillston, go led, rotal script a very real reasonablely when he rells the man in

Samedy covers the coupes below. HAIL COUPON TODAY pertance. We must office every paralle

Please ridd no. verboad cont. a same of the 64 may been PORCENC ANDALD FO 8330 NOSE





Among the prometest men who are Thursda I Wanner, President

LIREPTY AIRCRAFT MIRROR

Liberty Arroad Munay Liberty Arrest Mercer up all monett on their class have They

sweep without daterton swands Each ficker plone coursed with automic good viston of all times. All Diberty Missons one new buch

mildery, transport or private.

renewed at the Army-Steep station Resent centifica-in is odd a steep to their

sound reliability, one to meek to tener

Review of Potosts

continued transferred, "restricted of an extension of securing that the securing that the securing that the securing the securing securing the securing securing fraction and the securing securing fraction and in statement of the securing fraction and in statement of the securing securing the securing securing securing the securing sec

buy first I books com law hit molecular little for the law had been a just permited being it little at a little permited being it little, a J Strongers. Tell Wheel or fille Street assemble, supplied a wheel take engagine at an post of the post All places Flight indicator has notocome senter in the provide in response to limite the response to the fine to the response to the resident from the resid

Book Reviews medium of corodi america of factors broadly on the sphoot with an electric terms of medium of terms of the sphoot of the sphoot

STATISTICS DISTINGUIST FOR STATE AND STATE Edition by Load E. House, Editor of AVAILABLE STATE S

\* HELPING AMERICA PRODUCE MORE! \*





Write for the Casalan Let our enrissers work with YOU.



AVIATION, Number, 1866

\* They're out on America's "production fronts," giving freely of their highly specialized experience, assisting manufacturers of armament, equipment, munitions and supplies in keeping production lines moving. They're aiding MACHINE BUILDERS to apply anti-friction bearings more economically and efficiently. They're helping MACHINE USERS to get the most from the bearings they have-to lengthen their life-to reduce shut-down hazards. At our factory, The Engineering and Research Departments are equally busy, soluing problems in bearing application, operabearings in succe field. And all this acruice is being rendered without cost, THAT AMERICA MAY PRODUCE MORE.



#### Magnet seaso the wing of the plot Reging Fift Separatory is in this Anather, the Books Regist Atlanta, because this wing is which a protect of Anather Atlanta and Harr Plant and Hall Make.



THIS IS AASIC . . . We the fundamental reason for using those marrical elegandable aborded bank. They're receiving designed, analyses and helpbought to their arresest state of perfection "the hard vertice envertices on lead, see and in the air. But United States Bacterial Teels to work for your Thur'S sten un preciuritan imposso results, cut costs.

#### SPECIAL &" HEAVY-DUTY AVIATION DRILLS



Sall bearing throughout, Quick make and break Switch, with lacking pin in center of triager.

> dates. Some models avail. able for early deliveries

The UNITED STATES ELECTRICAL TOOL Co.

SERVING THE

## Petroleum Needs of the Nation



 SINCLAIR produces (iii) from more than 8000. · MANUFACTURES all popul of persolvers products in 10 modern refineries processing · TRANSPORTS 300,000 bernils of crude oil of pipe lipes; also employs shousands of smk · OPERATES a chain of sesserfront serminals from the Gulf of Maxico to New England. a DISTRIBUTES remoleum products through 2000 wholesale bulk plants which also service

· PRODUCES basic material for manufacture of conthetic rubber in one of the largest burndiene Sincleir is America's outstanding manufacturer of habrimets.

INCIAIR AVIATION OILS

FOR FULL DATERATION OF LARBORATION COUNTY WELL SHOULD REVIEW COMPANY, LIST THIS AVENUE, HER YORK

ATTATION, Messaher, 1846



seas and round the world in commercial air service. When war core, this experience was put to good use—for comini twa ready to provide reas of thousands of these dependable units for vital service is militury alexanf. Testay, of course, they for all fight on every front—halping to apred Vilsacy. This added experience is expected to a predict the viride engineers in their potwers planning. It savers throunds and

OHMITE MANUFACTURING COMPANY

Bernard Manufactures of Educatic Residence Tely Decides

Be Right with OHMITE

RHEOSTATS • RESISTORS • TAP SWITCHES

Year Assess Beak

\_\_\_\_



MALLED ON PEQUEST . . . WELLE TODAY FOR YOUR CORYLL

Ad once in Total or Gooth More Littles Toolshook Little Engine Leithers — 6" to 15" wines, 3" to 12" toolshook Leither Leithers — 6" to 15" wines, 3" to 12" toolshook Leithers — 6" to 15" toolshook Leithers — 6" to 15" toolshook Leithers — 6" toolshook — 15" toolshook —

Topiasm Lerbes, and Proconon Terret Before ser closely disastered is sobie and described in this new costalig Complete specifications including expecifies, specific tends, and whights one privated appoints the distribute at each lafe. All contributed features, occamisms, and enachments are also shares. Every sizer of machinery should have a copy of the centring at hereil fair rendy reference. Contribute of popes, 11° a 50° for mondern reference. Contribute of popes, 11° a 50° for mondern

Also, ask for details of our Post-Wor Prinnity Plan if you are now planning for the future. This will assets you prompt delivery when civilian production is resumed.

ent was educa - sent ros careco

SOUTH BEND LATHE WORKS





### When There Is One ... Instead of Two Wars to Win

We'll Start Switching Back to Peacetime Prefabricated Steel Buildings With War Time Sound and Skill ning will make available more Butler steel berildings

Strength in relation to wright, Commortness of For more than 30 years prefakes sesso of strel building has never been easily in Butler factories one practical store after another. Count strides for-

software. Mahalite. Economy, These are some of the inherent advantures will further incorred men Yes, with one war instead of two to win, yes one begin to tay this mest receiving of skell and menuloud

BUTLER MANUFACTURING COMPANY Fram 30 years of know-how and from emergencies Galaciana, H. Kenner City J. Ma. Minnersol's 14 Minn. **BUTLER** BUILT

AVIATION, Namember, 1944

STEEL BUILDINGS STEEL BUILDINGS . . TANKS (Storage, Processing and Transport) . . PLITERS . . STILLS ... DRY CLEANING EQUIPMENT

AUXILIARY POWER ANEW CHAPTER IN AVIATION Ove of several Righter models now in development pendence on oir currents and adding a safety is this 4-cylinder engine that will add an important factor that is lacking in engineless allders cheater to madern aviation. This liabbenight, highly For years Righter HI-Performance Frances bown efficient power plant is adaptable as auxiliary been powering small aircraft (ere. Right trainers

power for glider aircraft. Successful experiments have proven that when thermal lifts fall, retractable engines can "take it from there", eliminating harandous Insdinas reducino complete de-

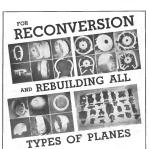
AVIATION, Number, 1864

experimental models, torget places) and have distinguished themselves for their endurance and dependability. Their service record has rated high

RIGHTER

for full information were to: description brackers on Baddon Mi Performance England RIGHTER MANUFACTURING COMPANY

Manufacturers of Liebt. Compact. Reliable Gazaline Engines





Eccondido, California

One of the oldest establishments in the business Combination N.A.C.A., Exhand River

Combination Speed-Exhaust Rings Streamline Exhvest Rioux Second Bloom Cooling

Cebin Heaters Flash Boilers Cooling Deflectors Seinmera None Shuttern

Streamline

Exhanst Elbons Cowl Stampings PLYTUBE OFFERS YOU ... High Morhanical Strength Corrosion Resistance High Dielectric Strength Wide Variety of Sixes Easy Workability Law Costs

MEET INDUSTRY'S NEW LIGHTWEIGHT MATERIAL

and explore its unlimited possibilities in design, febrication and application

To know about Perrene" is but a few som in a search Portrac is obvioud rebuse made by building up

The fact that Payrous is made up of lightweight, PLYMOLD CORPORATION Lawrence, Mass.

Our engineers are prepared to study all possible

Armer Plating





420 LEGISTON AVENUE, NEW YORK 17, N.Y. - FACTORIS, WARRESTONN, N. S. AVEATEON, Navierbee, 1844

THE NEW YORK AIR BRAKE COMPANY

AVEATOR NAMED TOLK

51.7

### CHAMBERSBURG

### CECOSTAMP



ments, please write us-

HE Cocostamp continues to blaze new trails in the formation of the tough, springy sheets of lightweight, hard-to-form metals used in the production of sircraft and other modern equipment. Having the ability to produce even intricate

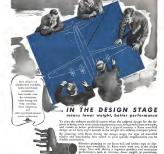
shapes in sheet metal without tearing, wrinkling or stretching, the Crostamp opens up new fields in the formation of sheet metal parts for use in the limitless post-year market. New applications are constantly being made by Croostamp users, many of which have been photographed and described, and are now a part of our files. Perhans you are working along similar lines. If you would like to see some recent develop-

CHANGED SHIDE ENGINEERING CO. - CHANGED STIRG PA.

DATA OR PROTOGRAPH This solutions of shoes on exfairing, is smoke in two blocks. forming one port per bless. Inchstone alle has effectuated the







BELV ON STAN TO Syan Astronomical Company, Son Street-Munior, Astrody Was Production Count. Inc. Section Office - 430 Leakages Avenue - New York 17, New York DESIGNESS AND SUILDERS OF COMBATANT TYPE AIRPLANES AND ESHAUST MANIFOLD SYSTEMS



plants all over the country. The high-quality American Trees. are shillfully contailing the strong can Trans Brass Coursel Cables.

AMERICAN STEEL & WIRE COMPANY

COLUMBIA STEEL COMPANY

UNITED STATES STEEL



It is reported that . . . . . . . Factory roofs actually supported A second marrow shows that \$955.

now here would be mark those party

get ready with EONE for Lancesce San Francisco has a plan for a 28 and temperatures to 650° F. One of the lengt the peaceful-

ger reads with CONE for Immercow wantenily at the rate of 3,500 per day. They are preferable in some poyversent, one farrillar office ma-

art mate with CONE to common By the use of a resin estracted

est easte with CONE for tamerrow steel. This material can be readily



amouther refine trains.

of each with CONE by temporary

corner, now costs 57 50

An aileren control is a relatively small part of an airplane...yet think how important it is to the flight of that airplane.

Piston rings are relatively small, too, but <u>not</u> small in <u>importance</u> to aircraft engine manufacturers.



The world's limit plates rings are steaderd epispenest for these world densess sicred! regimes—Allines - Wright - Stobiology-Indit Wright - Buick-built Prof. 5 William - Worse - Fachard-built Rolls-Rosse - Fachalds

The least live live live land

The Perfect Circle Companies

Militarion, materia - Mahamad, Indiana - Mew Caste, Indiana - Tytes, Indiana - Terreto, Galado, Can

# Keady...

Brain miles on the solder of the sizes commend Today to be making SAFE. T. COUPER for the north

Our engineering stell in anniable for consultation



... a new tool of The electronic take may easily prove to be incredible speed and versatility... tance welches was kepted to seed fabrication,

confusted with promerous besides. penery in innerworable operations by increased

trade merking, discolvenion and warping. house Pleasante Tabes in welding and tarray circuits—root, resea, best and projection webber is accoundabled acceptably efficiently and quickly. Tim readers welding technique can be applied to caughtus steel, aluminum

fined to welding. In countless other spokes

For electronic divines you now have in service, or for non-equipment you are planeline, observe appeals and make on

the tubes of assured uniformity

#### QUICK LOCAL SERVICE ELECTRONIC TIMES

Lection should be continued development of local spocks to make a complete has of

## Westinghouse

Quality Controlled Electronic Tuber HISTORIES PRISING to Control Town o Andrews Will A Village a March Males and Park Control

AVIATION, Number, 1864



Good picture — to American. Not so good from Tojo's vlevgoint. And as each grant, 4-metored Liberator "scores again," the day when our boys will be home mores just

that the earberriers and feel pumps we are hislding for these great Liberators and other planes are a part of the whole trumendous pastern of Victory . . . a Victory that American hoys are assuring by their unparalleled corrage

and skill.

We look forward to more electron like the one about.























Most Dayton + Wichington + Hollywood + Montreal - Manufacturing Floric Mare Task + Yes



This Book Tells 3 Ways Your Product May Be Improved with Silentbloc



SILENTBLOC



Ognemi Salenthine mitter Langue berrings -cap't sky. Needs no Inhanceless. made, with controlled sampleds, using nor enable you se folges your product, one







Mechanical Goods Distrion, Wobarh, Indiana



been as necken as at present, our has the fature of the manufacturing executives a AUTOGIBO COMPANY field been as promising at The Associate Concessor of OF AMERICA, Willow Grove, Person Luxus

would blue a specific across to this countries... and we ... America. Its enquerous and research staff, its records with that we could eve at That much can be said. of development, reperimentation and showards of however, with but little likelihood of dimensionals. As a hours of firsts, and the mela to use its paragroup inso time in the twenty-old vesco since the world will ventions, offer incidentable assurance to licenses. We

how many"Wings of Tamarraw will rotate?

AUTOGIRO COMPANY DE AMERICA

IN INSISTENS FOR A RESTRE COMPANY ID A A AMERICA, INC.)



### AIRWING FABRICS AND TAPES ARE Made for the

Acres to Avenue Pabeics and Tapes stress weight place demands grest durability

In addition to fabrics for Helicopsess, the Pare come, Lightweight and Utility -If muck items of clocks or tapes do not of its rotor bindry and fearbury while Ale, rares were requirements below unconstructed wing Tapes is saw extensiveneshood one problem to Thumon - supplier to the



text against folcome at many wird marter. Array and Nove slow World Was I



finished product.

by using Tenion Seaulan Scotl Tuber instead of but stock as material for purpos pins. By union Tembers Tubes, drilling, boring and the anni output of five using but stock. These economies enabled the manufacturer to save \$100 per cagues. At the pectoar

Bearing Company, Casson 6, Ohea.

Similar savings may be possible on your product. The quality of your product soo





Investigate the wide range of Timben Seam-

less Tube sizes available in allow and cur-

then he thought to himself

### JIT' TIAW YHW" YOU'RE CORNERED?"

AT his recent reception in Washing-ton, General DeGoulle and General Pershing were deploring the havor of the war and hoping some good might result. DeGaulle remarked that perhaps Mahamat

"Without was the world would

It is a sad commentary on human inertia that men must wait until the own is jabbed in their ribs before they will stir themselves to great effort

But it seems a fact that men usually

Even today, some business men are tion before taking action. And others ....

### "WHY WAIT 'TIL YOU'RE CORNERED?" he says

LOOK, GENERAL, how some are besting the gun of competition through recourse to these Lincoln developments:



### Gun Beater: David eneticences control provider

the right TYPE of see and the right AMPERAGE for every job . . . a "talker-made" are at the twent of a water. Ask for Brd. 335

Gives apparate control of arc by Full details in Bul. 341.



### For chrome-moty steels . . . sli wilding positions, Produce smooth raetal. Details and procedure in

Sun Beaten: Recognized as the world's leading speed . . . for quality welds . . . the job. See the "Weldirectory.

THE LINCOLN ELECTRIC COMPANY . CLEVELAND 1, OHIO

America's greatest natural recourse

ARC WELDING









Prevent Production Losses with VEEDER-ROOT COUNTING DEVICES

AVEATEON, November, 199



### RARRER-COLMAN CONTROLS

FOR A UNIFORM CABIN TEMPERATURE IN NAVY-TYPE "LIBERATOR" BARBER-COLMAN contributes to the efficiency and effectiveness of the factnous Navy-type "Liberator" by providing Is consists of the two Power Units and two Thermosters shown about these a Threeway Override Switch. The Remote Bulb mixing dumpers which Need air from the tain a specified doct temperature. The Cabin Thermouse controls the other Power

air necessare to maintain a uniform sommer. stare in the cabin. Anti-icing hers for the tail surfaces in obtained by menos of the Cabin Theorems This offices a manimen of heured air to he supplied to the emperous due sweet. The equipment functions rapidly and accurately to meet the functionaries conditions encouraged in flight. It is light, compact, and durable-Sources are available for many sixtraft angliculous Weire to Barber, Colman eneinsering department for fall details.

### crosen, enversion the volume of hested BARBER-COLMAN COMPANY 221 ROCK STREET - ROCKFORD, ILLINOIS

AVIATION, November, 1946

# The lights go up



### ON PHOTO-REPRODUCTION!



A revolutionary improvement in contact papers! The new Photo-Arc arcti-diffusion emulsion gives accepted latibade, executor contrast, executor density than your herfore - hope creater legiblity, CLEAN, SMARP LINES. No fuzziness. No lost details.



1 The only silver-emulsion reproduction papers which can be run in any kind of continuous blueprint

2 The only papers which can be handled and reverened without dimming fights. 3 The only reproduction popers of any type which incorporate the new anti-diffusion characteristics.

This exclusive Peerless development results improves definition and permits full populational exposures without closing up or lower fee lines. Send for literature giving full information





AVIATION, November, 1946



1944 ... when other

records are templing

N 1915, when the attracechere balloon, Esplane II. note in the createst hearts and reached by man also accompanied the transplant fights of Explore I

shadase commany and dependability were essented coeuting that wert assemblace of equipment which

arragement missions to recognition of their long record of missworthy performance. cus court on Eude Burenes for dependability, long-life and ease of misureasace. Explorer Land Explorer III were bulloons of the



THE ELECTRIC STORAGE BATTERY COMPANY. Polisidebas 52



### ISO-REV Constant Sheet PROPELLERS FOR UNSURPASSED EFFICIENCY

SQ-REV medicine constant around reversion at ever RFM selected shades fliebt, breanestier of newer input or air second, effects teke-of at 100% of manights herenawer also estimus perodynamic argodier officiency end engine econocry under ell conditions of flight

Tadey agr autice exercise and recourses are devoted to the college, wer effect. We feel fortunate that our contribution to word victory may elso place added enjoywent and utility within reach of the plane ewiter of temesters.



CONSTANT SPEED

ZIMMER-THOMSON CORPORATION

29-05 Review Avenue, Long Island City 1, New York



NATIONAL AIRLINGS, INC. Airolane weight savings have a highly practical value to

constitution and siding operators. To the compercial operastor, every negatil of nunecessary weight saved means increased "National Airlines' monitorance and operations figures show

"We find BOOTS NUTS very fast to attach-they can be used

over and over again and they outlast the plane," SELF-LOCKING NUTS Surgesting below that a Chance is deliver in belowers in technical a Smart Co

· Warping standard favorage on every Can be used again and agree, without weekening shall ref. for a still.



### HOW TO LOWER YOUR X-RAY FILM-PROCESSING COST

Doubs off wore old very film proceeding substitute and fill up with Supervise Developer and Fixer. Because of their long life, these liquid chemicals are economical to me, proceeding x-ray films at

Additional responsy to achieved by revitabular the Developer periodically with Refresher, thus making the Developer last up to four times longer. Order connomical Supermix filto-processing chemicals today. Address your nearly G-E Branch 045---



Name Tot Rey De A.S. Mr. Stand

UP THIS SCREDULE OF ECON	CONTENT D	BCOUNT	PZICO
to battles to make ONE GALLON		Retricter	
per beeffs	\$1.00	\$1.15	\$1.00
per case of 12 hottles			
to bottles to make 3 6ALLONS			
per helife	2.75		2.70
per battle la lais of é er mon			
a hetter to make 5 GALLONS			
per bottle	4.50	5.25	425



Cherry Rivet that makes an ideal temwood, rubber, fabric-soft and nissisle materials. Just bind the assembly with a few wall placed Cherry Tork Block (Dee't use Cherry self-plugging type rivets for tacking.) Then proceed to finish the job as specifiedweld, rivet or stitch-easy, naick and next Cherry Tack Rivers held tight-up to a 300 pound force in a firm orin. The stores disch eliminates shift, slide and wabble. Not critical obstruction above job to interfere with work. Easy to reserve—pilot hair



neering costs. the ich cake



Cherro Hivet

AVIATION, Namedon, 1964

ready for drill-cuts eroi-

ble-and of course works

### **Concentric Transmission Line**





Ten years of experience in building concentric stransminion line sed succised repolance matching

Seven searched sizes of Dootlette Lines see Freed outer and inner conductor, except Types C-1 and C-6 which use solid inner conductors. The insularing bends are made of low loss commit—Impervious

to make an expected and farmed accuraly for more raining proper electrical and mechanical characterlades. Carefully designed features and accessories for new econtroment are also available. Special situs are made to order. For engineering information concerning installation and wer, feel free to comett our engineering staff, WAITS FOR CATALOG AND PRICES







### It has to work alone and like it

No angle, also or hat's about it, a Heatelite Porsable Generator, associated in a plane or a soul in the aposition to receive name made agreeduce. If it is usually creased into once how, uptle corner where it is practically impossible to occurrent in a Bossechie Generator of the product of

with all halife guedne engine has to work and stand upon a water the complete land of unage. I, shows on each ... without necessing any autonome service and ... without necessing any autonome service and ... without necessing any autonome service service and allower proceedings of allower proceedings of allower proceedings of allower proceedings of a grant of the complete land of the



BY YOUR PHACE-1146 JOBS

or Blooches Perchle Generators that
til are other the was for operating leftfloodinghes or electric tools will work
to study or allowed tools will work
to study or all owners. They will be 
aligned to some analysis the traglest
tools of the tools of the tools
tools of the tools of the tools
or more regged and prevented than ever
e-more regged and prevented than ever

Portable Pumps - Generators - Blowers

THE WRENCHES THAT SMASHED TRADITION

### K & E **SLIDE RULES**







# ROTOL

CONSTANT SPEED VARIABLE PITCH PROPELLE

ROTEL LINITED, ENGLAND . Connico Aspertmentation: GRITISM ACROPLANC ENGINES LINITED . MORRELAS

# THE NEW ALTAIR HYDRAULIC Shutoff Valve

THIS NEW two-way Stattof Valve—shready in production and being used on the lotest indicary strplanes—has been designed for easier installation algebre weight—and dependable operation. The valve provides a positive shutoff for any section

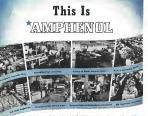
at energency.

Mounting has been simplified as there are no

obstructions off the face of the valve which require spacers for mounting bethind a panel. The valve incorporates flamous Attar Plastic Proposits which are interchangeable in the field without presenting operations. This feature, in addition to the ece-piece body outstruction which cannot be arcidiantly disassembled, materially simplifies servicing. The valve weight endy of spanish, write today for

complete data. Pacific Division, Bendix Aviation Corporation, North Hellywood, California, Sales Engineering offices in New York and St. Louis.





\*Menufacturer of electrical conduit (Bucilele), connectors, cable excembles and fittans for the year who must been served but easily broken repositions, whose repositions must he maintain explication or measure-proof. A Monaforteer of robles and representers for the most exercise of altreables francisory work. A Manufacturer of the finest of radio naris. \* Manufactures of plantic auto for other manufacturers.

"Amphenol" is a femiliar product name to this type of equipment to clover and clover component usets for electropics and electropal transmission exceptment has been the Cast-

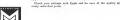
end tudor all Asystemal departments on of connectors each mouth, millions of lest of veers of radio broadcosting Amphenoi's one of the higgest fectors in production for

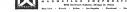




Shows Up Defects Non-Destructively

A signate Zvoja impection under block lapte reveals cold shots strickers crecks, possetty, blew-holes and surface areaks with word The cost measurables fittings in the pictures above those typical





Pan American World Airways depend on SUNNEN HONING for Accurate Fittings of Bushings Up to 2½"

Yes, you, loo, seen depend on Sween behelp to give wroch, accurate file, because occurry within .0001" is parameted. There are an Nigh spoth to wear away, no dighter marks, no bisides to get delt in addiface, the Serven method of his files, the Serven method of his gives a true life right from the start and produces a larger leating service to.

In service shops where piston pin holes, connecting red bushings, etc., are refinished in sets, a whole set can be refinished without changing the serting of the modifies. Positive setting of the still microweter stop prevents optionize over the contraction.

Assure smooth, occurete grinding of your small bushings with Surmen honing Write for complete details or ask o Surmen realizers to call



SUMMEN

SUNNEN PRODUCTS COMPANY, 7942 Monthester Avenue, St. Leuts 17, Missouri



FOR THE VITAL LINK IN FLUID POWER

Think of fuil power as the three-link chain. Source—Circuit—Utilitation.

The Circuit is the key like. It may go around corners and into tight photon. It may even be vulnerable. Too often it is just taken for transcal.

The satcess of fluid power depends on the engineering of the Circuit. That is Parker's business.

We do the engineering from design through to installation. We build the valves and fittings and the reals to handle them.

Our specialized know-how distilled from twenty years' experience with Fluid Power System is at your constand.
The best way to get this know-how applied to your problem is so sak a Parker suginare. Or write directso The Parker Appliance Connews, 1732 Fuelid Am. Cheshoul 23, Ohio.

AVIATION, Number, 1944

PARKER SELECTIO TO CESTIONNEE SURPLIES WAR STOCKS OF PRIOSECH VALVES AND RETURNS Recognizing that means of pressures valves and dislices.

pointed Profess to be a distribution against the dende on the pointed profess to be a distribution against the dende on the test page and a set play queen, percentages and application of the very large stock, while, where or inhighous PARKER SERVICE AGENCY 172034 Bond Arman Generalized 11, the metal of the pages for the pa



LOS ANGELES



an aircraft · · · FORGING-----



Which Maximum Metal Quality Has Been Developed By Forging Embodying a combination of basses with depressions, this fassions bracket

the several directions necessary to completely \$11 out oil sections of the facults. The development of the maximum central modify inherest in the metal is vital to withstand the stresses this part most survive under service conditions. The garrest faraing technique is the law to abtaining the massman strength and teaglesess. Throughout 31 years of forging production experience, our engineers have utilized, over ced over oppie, oil of the known forging techniques; frequently improving a technique in order to achieve the full IMPROVEMENT OF METALS BY FORESTE, Design the port to perform its function; then consult one of our forging engineers



for supportions on how to get maximum metal quality by furning it. IMPROVEMENT & FORGE C

AVEATION, November, 1944

DED EAST 6410 STreet CLEVELAND. O

# Accessory Dealers !

Here's the franchise that means

bigger profits for you!

A New Franchise that Builds Your Business and Assures MORE PROFIT



FOR many moretis Firescone, while producing And as a first use in its postwar plans. Firestone dealers which recordes them with a wide variety of high quality merchanding that their customers want and need - tires, tabes, wheels, brakes, brake lining batteries smark rises, finishes and many other products for their planes juckets, gloves, sun glasses and numerous other other products may be added to the line finders, hipoculars, field classes, cameras and other conferent that private flyers will securing So sign on NOW with Electrons sory dealers with a complete fearchise. For HEmlock 1671, Akron 17, Ohio.

MAKERS OF

Firestone AIRCRAFT COMPANY TIRES, TUBES, WHEELS, BRAKES, AIRSPRING LANDING GEARS, RATTERIES VELON STAT COVERINGS, FORMEX CUSHIONING, FUEL AND OIL CELLS, BUSHING



## When it's baggage instead of bomb-load

\*\* Not too far distant in the day when America's giant birds of the air will be built to accommodate commercial cargos and passengers in place of prevent Ana-semabling assuments. It is a day to which we all look forward... for which we place with an eve to keeping America agreems in the disc.

Here at AFOO, place builders will confine to find the compension as exercise to delivery of the dirige in bein amendy lane, August will have a reliable owner for the replement finiting request 30 series will prosection at flexis. Deligens and enginess will discover expalse, families are anisotom to implying expell fittings in proper lights, constructe to senterly through the process process place constructes to senterly through the few formalities, the features when the contraction of the contraction of the sentence of the contraction of the contraction of the contraction of the wish have open contraction of the contraction of complicity.

sizeralt fittings.

It is not too early to make arrangements now for your powers fittings . . . to tell over soit AFCO the fittings poblems that will be yours and one when a similar to married normals . . . when it's housen instead of





FITTINGS OF QUALITY FOR PLANES OF WAR AND PEACE

AVIATION, Namedon, 1944

AVIATION, Navember, 1946

WESTON ELECTRICAL INSTRUMENT CORP., 685 Feelinghavaen August, Newark, N. I.



#### SCUTTLED DUCKS

I tree areas that allowed their feathers to absorb water. They couldn't mand the earst weight and make

Portuguely Hyear can lack then problem of absorption

This merial hist of Harar's properties -- all highly measter is aircraft applications—will show you whe 1915 to 2015 Aghter they many other qualities raddens

M in your product, resilient parts are exposed to petro



Free-write for your copy of the year pechanics Hyper Glessery of commonly and symbolic robber terminology.







You can't always judge the toughout. Systems regenered for the specific of a fire by its our. Some relatively small free fight back so viciously . . . hour on so stabborals . . . that shes

Extragrished in 20 Seconds surevise gesolene isso the ner . . . 10 rellions minute, feedbar a fact around retain or make easier the job of the for a fee that's serv tough to handle envolve had been allowed to spray for a full release. Yet. Cordon CO. duchaged at the sate of 700 pounds per minute from a single Cardos north

(as shows in middle riction) extra gainhed this fire in 20 seconds-

wheels under your of custon dioxale Thursday to their charles time obelies, to

In Caples Systems and Fire Trucks controlled and applied Carday CO.

(1) Has uniform extingua-laser of arprovide over application of Cardon able in angle quantity for application or linds rate. (3) Provides back 6.0s. an scores of war industries ... and licked ... time through releasedy great distances. Write on computer letterhood for Bullions No. 2016 continuor data on Caples Engineered Systems and Mobile Essay spent applicable to pre-

> CARBOX CORPORATION MILL MULDING-CHICAGO 1, ILLINOIS Substiti - Correland - Advala - Pitchengli Jos Francisco - Lan Angulin - Smith



AVIATION, Number, 1944



#### FIBERGLAS\* XM-PF Aircraft Insulation

Only by scene, feeling, sensions: you realize how reducing different it estation when properly testalled, and shorohilds has made at ideal for lone U. S. Malitary Asserteft. the recentred treatment of pilote', wede up of item, insurance motorial -glass in the form of very line

then hooked into a fireble out and fittings on recenft, also the inor feltuer to mustave its form and stan the fibers will not not on turn. And it works as lettle as here. Equally important, this insuone pound per eable foot, while providing an optioner of implaint are of evolution under extremely



Il ves are not whendy familier with February XM PF

OTHER AIRCRAFT USES OF FIREBULAS

AIRCRAFT BLANKETS

ander type of Fibergian harmonismakana,





adventures. Why not our un touch with the brunch album FIBERGLAS WATERIAL





Batern Manufesturers THE SECRET SECURE PRODUCTION WE MAYE PRODUCTION PAGELITIES ENTERNO TO SERVE MESTERS AND Experience by spars manager handle your post-war production for western and export sakes. Interested in straight report solder, incommon an earth of manufacturing contracts, license to manufacture and sell or alternative arrangement. Our plant is modern, up-to-date, properly balanced and thoroughly ecequate. WRITE FOR "A PODERN PLANT AT WORK,"

want to not on the post-war producparent pending? Send us clear We may have an incerest in comonce. Your rights will be sentral. ously respected.

NATIONAL

IDS ANGELES 3 CALLE



# Fulmer A Honing Machine

FOR TAST PRODUCTION AND PRECISION ACCURACY.

The Falmer Healing Morbles produces round, straight, search have to weeking televisers to small to 5000 . It is an endoughty flexible markets, that to a wide range of spirally surface Grack bled for finishess assembly relinders, connecting reds, all types of control control or obedes, constants not budget

suffer our reach of operator. Stoke setting, home respecting speeds can be handled entirely frees

DILLMOS EXCLUSIVE SUMP SYSTEM to exact woods of realist is carried in how of the markets. The Tuleser column many orders person eleming solid

With the Foliage patented "Stop and Deck" system, the With the Februar patented "Prop and Deed" system, the within strate reports of mechan, without shock or impact to marking or work. Smartle in "Sorbed in" at such assessing point and can be held there in definite second (pergraphia) A quality muchine in every respect, the Februar House,

Write Today for Complete Information C. ALLEN FULMER CO. 1225 FIRST NATIONAL BANK BLDG., CINCINNATI 2, ONIO

AIRCRAFT SERVICE ENGINEE



A THE NAVY ARREST, woman place configuration during marries. F Sees Leas - 1000 propels seeler each wing 1 SPING FROM MIS MEN, 200 19 superhannel comment extension

AVIATION, Naveabor, 1844



Quantitative in speed, religing and contest operat, Machines Such from Service to Borlos

North American Aviation Sets the Pace PLANES THAT MAKE HEADQUILD . P.S. Norther Select LASS Solder-Sender L. P.S. Joseber Brich American Apieties, Inc. Monley, Accord Was Production Council For



#### A letter we prize . . . from a Mustang pilot overseas

We're mateful to the wilet who took time out to write this letter. For it's absave velcome news to here

- right from the boss who fix 'enr-that Pockord-built Rolls-Royce engines are doing a good job in this war. Today, we're concentrating on keroing . . . built to the same high standards as these already engines-and Packard mastee compan for PT hosts....feeding to the fighting front to help shorten the war.

But, as soon as the progress of the war permits, we'll owing back into our procarr oilest friend that he will not bis Parkard "as some as requible."

he's fising today. . ASK THE MAN WHO OWNS ONE &

PERCISION BUILT POWER



Superfortresses do it on 5KF'S BALL AND ROLLER BEARINGS

Surprise package for the enemy, the B-39 Superfactors with its scinimum of 141.2 feet, leveth of 96 feet, and heaths of \$7 feet Japan, its four 2200 hp. 18-cylinder, redsd sie-cooled

Wright Cyclose enirines never let it down

Neither do its IECGO Bearings taking the repulses of the cylinders on the combinate of these mights power plants . . . nor its #USF's on their other vital Where the effectiveness of loss-dittages boustons minious is recovered by prochanical efficiency, 2005/P

Bearings are an important part of the picture - abrasa. MARY INDUSTRIES INC. . FROM ST. & ERIE AVE. . PRILADELPHIA SA PA AVIATION, Number, 1846 Greek for Field Carrier or Factory

HYDRAULIC TEST MACHINES

AIRCRAFT BYBRAILLIC SMATSKS DEVICES AND COMPONENTS

N flying fields, aircraft parriers and in factories all over the world, Green Hydreylic Test Mechines provide accurate thorough ground inspec-

MODEL HS109

The Green standard line comprises electric or gasoline present portable models developed specific celly for testing hydreulic systems and components on the field or assembly line, and production med els for fectory inspection, operational testing and research work. Green Test Mechines also fill the system. filter the hydroulic fluid and procharge accumulators, shock struts, and emergency air systems with compressed eig Great attainers, who pioneered the archivation of

tion under flight gonditions.

hydraulies in the eigereft industry, ere eveilable for consultation reparding any standard or special test equipment to meet your requirements. Write or phone us your problem.



#### The WHY and HOW

of DAVISON DEHYDRATED PACKAGING THE PRODUCTION STORM PART CORRESPOND MATERIAL ROLL using PROTEK-SORB silica gel\*



As Assumbanc except county to CREAT with An expected mend under where the E.H. in these allowable mentals are presented from the 6: Whereards bear way to AVOID our and conceans

Minters saper-proof hornors alone are not one Suppose so their were smiled wishes a barrier at 90°C, something with any horses a E H of 20°C. (If on chart) With the correct amount of Prossic foeb soles get-evied in the package, the S.H. will always be well changes the package may experience. The farm will be SATE from run coronner, milden or mold.

EATE from two cocosines, maners at these.

Else Pratel-kief allies got, the tibits gel stade especially for Decime Delystated Fachaging, and be \$60°C.

Cornelt us no your parkaging problems

AVIATION, November, 1844



CHARLIE. Boy, at Rey, when a fin is his, Outy see often the first to be attacked by some carmy alone prophing up on the told of his marking. Coughly the last on field his way job especially on Night-Ou's.

But trained in the minute for his job with every possible contrinues to ensure the susseth working of the mechanism in controls, "Tailored Charle" just concentrates on his absoring 'on drees and challing 'on un-And has where do Yokes Filters come into the story. Birds hore, Yakus Ale, and Oll Filters are fitted to the aircraft he is fixing whether it he British, Coundton or Agerrican. Voles Air Pitters accode 99.9% siena sur to nero-engines. Voles Oil Palest use used for parks pump filtration of these engines, Volus Low and High Pressage Popers for gran terrets are also fitted and incidentally also for retractable and programming hydroulle mechanism. Then opin there is the Yukea Flametrap Silvener for both redict engines and is like capper collegentung tell-tale caloust fluxes. Fighters, howhers, recommissment markings of British, Assertem and Affird Air Forest cocreting in all bottle areas here here fitted with Volces Filters and have steed up to all

demands made upon them. The practical experience galacel we glodly place or the disposal can be used not endy to prolong the big and efficiency of algorith, but help to oragon added success and greater safety for our vallent fighters of the hir and " born "our Tring." Velor have produced over 3,000 models of their fiber and, of course, accorde the secretary hundres and during systems. If you have not fibration problem consult 2. Vokes Acresso Filter Demont.

3. Vehro traical Air Febru for Aircraft.

VOKES FILTRATION & SILINCING CO INCORPORATED IN Purk Avenue, New York, & YOKES (CANADA) LTD., 1123, Eav. Street. Toronto. Canada, Contrictors to British and Dominion Governments.

VOKES · LIMITED · LONDON · S·W· ESIGNERS, PATENTEES & MANUFACTURE S OF ARE, OIL & FUEL PILTE S & SILENCERS

AVIATION, Resenter, 1944





M ICEO Switcher have been generally adopted by the successive advancer because they are listle, small.

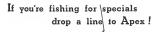
\*\*\*\*\*\*\*\* Cut-grown View of Type 8-37 Micro Switch



MICRO A DIVISION OF FIRST INDUSTRIAL CORPORATION

> -BUY EXTRA WAR BONDS AVIATION, Nonember, 2944

LET'S ALL BACK THE ATTACK



What it takes to build Socker Weescheswe have. How or square ... standard or apprint ears ... power or hand driven ... it's all the g sagge to Aper. We're cooled up for speed and fecibility.

Some very sourced not running problems have been put up to up. For most of these we

naconal problems. Drop as a liter! We can probably be of attriutures so you Apex also makes Sefery Proceion Topping Oberlos.

Wrenches THE APEX MACHINE & TOOL COMPANY - DAYTON 2, OHIO



## New way to get around curves!



Revolutionory new design enables Crown Zipperts stilled freely around shorp curves—slide foster, smoother! Toley, Cross expense, weden jot he laid wife. Ac Corps, Ordener and Quarternate affects and the company of the company of the company of the apper that enabled yields from your day of the Tomorrow, when the last dark has been first, the same use significant will did unit politicisme and the company of the company of the ton dat date can be appeal open, hagging conquirtates dependent of the date when can date are separated of the same peter and plate.

Prince Orects, Very, Leving, and an event, and a return, a return, and a return, a return, and a return and a re







PRECISION ENGINEERING

at production line cost

IN 5 weeks Jack & Heizer designed a unique reasonum motor for the Air Focces... made important improvements in mouse performance and life that had never before been thought possible..., and in 2 more weeks were producing it in producting-like quantity at a lower price to the government. When the way is won this Jack & Beliar ability will be available to industry—to

see we will the part of products, englaced and products with better parts of products, englaced and products with new precision at production line product of the product o





JOHN QUALEN . HORACE McNALLY States Play by Herbert Dalmet and William Ladwig Produced and Danced by KING VIDOR - A Very Hitland Read

ATTATION Named 1944

# DRABLIC KWIKIOZ VALVE

Single Seat Balanced Shut-aff Valve-Never Affected By Back Pressure Whether Open or Clased b Typical A-P Control development

for the alreraft industry, the KwiKloz Valve offers new advantages in hydroulic ressing systems and sircraft hydraulic system lines. A belanced valve, with a single seat, it permits easy and INSTANTANEOUS closing against a maximum pressure of 1500 lbs. p. s. i. It is more efficient, has fewer purts.

is smaller, lighter, and uses less material. Can be quickly changed for clockwise or counter-clockwise operation. Corrosion resistant parts, heat treated, ground, and accurately polished. Outside dimension, 2W'x 2% 'x1%'; made to take connections per AND-10050 specifications or pipe top.

For Knitcher Bulletin and Cooling of A-P Alexage Controls and below this control

Believe on A.P. Nydersell Continue Value
Contains on A.P. Mydersell Continue Value

---------Please and me the following



around all ardinery obstructions feater and better. Furthering Planck election and broads Planckaffor start make these advantages possible - greater strength vet kahree made to fit positively and snugity - do not sky affinets as

write for the name and address of the one nearest you Free rotains on securit - Floris Teel Company, 2221





PORTRAIT OF A CHASSIS BEING BATHED

## Whether you are windows the exterior of a track, commune

The selative value and balance of all the factors in determoved by RS, for Research and Expensesse are the directors agents. They assists raise, even to each agent the carried twenter in a compound may more than one drag in a prescapture). RE symbolaes two decides Turco belontanes have devoted to apprior and apprix with problems in the -Emilyfring Assert depress greate and til at they also -Callendal Arthrity disperses solide once mission particle.

-Seprestyles Value is the shifty to remove reprint for -Sufer Index is the children or almost eather placines or and said to broken column officers. -A perdated for measuring the energy of attachety or -Selvent Artists is the alaboy to put and our relative

-Ways Combining reserve or controls the element which cours maker hardway



advertupe of it on everything faces washing a Jacomotive to propering stammors for appdiging Call the Torro Field

Service May, or write to Tome.

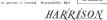
TEXACO FEODELCYS, DOC. Note Office and Feature; \$130 S. Control, develop, Los Angeles 1 - Southern Printers, 1000 Headquern Steen Herman Lt. Trees - Chicago Selve and Factory; 155 Wine sick Source Onclose S. Shanks + Office and Factory in All Printers Color,



Harrison's part in the alternit industry is to disgist and build products that dissipate beat. Figure 1 beat of combustion to be dissipated from the jacket content heat of compression to be removed from superstarged ain before it in the removed from superstarged ain before it in the state of the products of the state of the personat its particular problem, . . . a problem, complicated by the externer variation in complication of the complication from weal-world temperatures to the first cold of the strategislene. The function of temperature is the factorized from the control of the products of the The function of temperature engineering its often of the function of temperature engineering its orderman from our flicitive design—the heart of the control of the products of wright and compactness are the objectives, and they have been schieved in the Harrison heat transfer products serving today in Asserica's military sirectals.

WAR BONDS SAVE LIVES





DIL CODERS - CONTROL VALVES - RAGIATORS DIVERTIR VALVES - SUPERCHARGER INFERCURERS

HARRISON RADIATOR DIVISION OF GENERAL MOTORS, LOCKPORT, NEW YORK

# CAL-AERO TECHNICAL INSTITUTE is the new name of

CHIPTISS .

TECHNICAL INSTITUTE

MAJOR C. C. MOTELLY, PRES SINCE HET

GRAND CENTRAL AIR TERMINAL . . . . GLENDALE I. CALIFORNIA

## SINCE 1929-THE BEST TO BE HAD IN SPECIALIZED TRAINING-FOR YOUR AVIATION CAREER



where the control of the control of

CAL- AGRO

GRAND CENTRAL AIR TERMINAL 1226 AIRWAY, GLENDALE 1, CALIFORNIA

ALBERTAGE PROFESSION OF STATE OF STATE

AN EAST ON A SHEET OF THE AUGUST BEAUTY





Texale mill—All-courd heavy performance of Dobby lecter with Gall quicky infrarence realed in a 200

Gulf Quality Petroleum Products

help increase output and reduce costs

These planes are typical of hundreds in every industry that have secured starry wordswhile benefits directly as a result of the superior performance of Gulf quality lubercarts, quenching and curring oils. Increased production, lonser bearing and tool

How

seed—these are some of the results industry is obtaining through the use of the peoper Gulf perolleum products, as recommended by Gulf Service Engineers.

It will pay you to investigate these reserve efficient productions and evaluement souls. Call of Gulf Service Engineer today and salt born to give you additional facts on their custless and certain

life, better finishes on machined parts, improved rust prevention, lower maintenance costs, and improved physical properties in many types of

Back the Altack . . . Buy Noce War Bowls! helps make machines

produce more at lower cost

GULF OIL CORPORATION - GULF REFINING COMPANY - GULF BUILDING, PITISBURGH 30, PA.





# OLTO RADIO SHIELDED IGNITION ASSEMBLIES for **Combat Engines**

BOLTON MFG. CORP'N WEST HAVEN CONN.

chrader Apsarovita



Sure, the news is good - terrific, in fact, But don't for that give you the idea that America's paper shorage is over. More paper than ever is needed now to wrap streeties for our samies as they drive toward their goal. There's soll a manpower abstract in the pule industry.

So, you've still got to watch your company's use of paper with the hawk out of a paper miser.

Remember IS
PAPER IS
WAR POWER

The baling of wastrosper and sending at to the reprocessing plant is still of prase importance.

You've still got to use your ingentity and that

of your seeff to find even more ways to over less

All masterial made of paper and paperhoast until most be cut to the bone. Eliminate whatever you

can until complete and final victory ands the paper

USE LESS PAPER - SAVE ALL WASTEPAPER This adversions assembled by the publication and personal by the Was Adversaria Council in congenizate with the Wes Probation Found and the Office of Was Information

# PIONEER PARACHUTE CO. is teady!



There will be no need to weit for dependable, foul-proof Places Parachetes when peacetime aviation gets the green light. Indeed, Pioneer Parachute Company - originators of a long line of advancements in parachute design and re search — is ready new to range and refixing with the same thousashages and afficiency with which it is serving the Army and Navy, Planeer Parachutes will go for to errounce the widest possible acceptance of grigine in the coming tremendous expassion in air travel, Look to Pianeer Perachate Company for safer, lighter, stronger,



#### CORROSION RESISTANCE

... and its importance in aircraft metals

other refriercents a sikulia and

In addition, the layer Allows, ... Incomel.

# In addition, they have relatively both

Lase Practical Expension of Menel on the Printflattic Tabe.

State Tube ment deliver tree pronunce In the words of the makers.... "The problem of should the one commolor at-

shouth . . . effectively

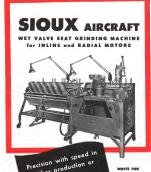


NOTEELS in made of Heard were whith ...

by Michigan Wire Cloth Co., Detroit, Fact Rooster Pump, made by Thomp-







either production or

maintenance



WRITE FOR

DETAILS

AVIATION, Number, 1844

Problem No.1: LIQUIDATING "FROZEN ASSETS"



record control speeds DISPOSAL OF SURPLUS materials and parts



May will mindly land in recognitive company a characteristic methodological professional gonety same or requirable nametries a schedule and magnellations distributed for our palameters and year forces. Because the process of the control of the c Buffolo 5, New York

U. S. FIGHTING SERVICE

SYSTEMS DIVISION



"AN" Specifications plus,



The Cleveland Cap Screw Company 2745 EAST 77TH STREET . CLEVELAND 4. OHIO



Cursianding power, traction and speed make Walter Some Pighters your first and fastest choice for nurway cleaning. Key to their exceptional performance is the exclusive Wolter Four-Point Positive Drive

Three exponents locking differentials proportion power to each of FCGR driving wheels according to their trop tion of any instant. There is an side-shaping, stalling or wheel spineing. Systemed high-speed playing throws serve for to the side-solarization dangerous snow banks. Toke the first stem towards mutting these sovings into affact at your airport. Wate today for complete informs.

tion on Wolter Spear Fighters





#### "Let's put our most dynamic capital to work!" mys Renter J. Kanen, President, Beery J. Kelser Constant

" A MEDICATE MOST BYNAMED CAPITAL SYSTEMATIC & A in the million or more vaccor non topical to live planes. These pipasees can open a rocat new chester your Industry. But will the assertion industry, with the roced of derive and achievement, one them their

"The answer is 'vest' -- if at sets movinir now. Let industry, with Government encouragement, take on a pre-selling program for associates, accept orders at fixed

And the first place to sell them to to the "test pilot"

prices for possure delivers; and let labor enter non-"With that kend stort, there is no economic or techduced 3555 personal airalence in 1909, and 7700 of

show in 1961, should not in the first tree years after the nor manufacture and soll a minutes of \$0,000 arranal airplanes, perhant as mony as 150,000, And it is not mislengry to picture the magnifecture and sale of a million personal planes during the post ton years -and 5000 presions to home and service then."

This is the market that aristanches had a factor it thinks of the sacre than a millen Tou-reading families-

Relaying that the ideas of eviation's featies are always of unreset to the eviation valuates. Total here even them under clouds for



ALLATION, Neceber, VI.

LOISES

AND FUEL

here as reversed is held to a sale minimum the

-element of course their all their sit is emergency include and loke all:

FOR PROTECTION AGAINST WEAR AND TEAR-DEMANI **REEVES ARMY TWILL** "FROM COTTON TO CUTTER"



Countless public salety occupazions specify region-tested Borves Army Twill, Wherever

durable, good-looking uniforms are needed, this son-quality fabric tailors smarth and gives superb service. Over 80 million yards of it have already been used to help could America's fashtingmen, and it is proving itself under the sourhest climatic and combat conditions of slobal war. This fabric, Sanforized Shrunk\* and color-fast to sun, water and perspiration, will meet your postwar uniform needs. When the time comes to order them, choose from a wide range of popular colors, for lone-lasting ened looks insist on Reeves Army Twill.

THE RELYES PARKED GROUP INCIDUES PARKET ARMY THEFT.

SA WORTH STREET . NEW YORK IS N Y

Representatives in Atlanta • Button • Chings • Dallay • Las dispoles • Philadelphia • St Lann • Montred • Toronto

Officially appointed distributors of

### Government Excess

aircraft hardware & parts special accessories

Deny er mlebl phobale AN



stock piles ... and changes raddeness! causely in account plants . . . the camponents lives are new, accord, secreft hardware, ports, and special. Invest providing market proces.

certified by government inspectors as sirling appropriate . . . are sold at the

Investigate this surplus! professe a parsone service by it traperal the successful fulfillance of the taking equations a press to user
taking equations of the first control to be seen on you and yearstly be seen on you and yearstly be warehouses to firms needing these had obtaining passeduce delivery, uniford

. Wire your rountrements to-

Air Associates, INC. EAST COAST ... Teterboro, N. d.

MIDWEST .... Chicago, Ill. SOUTHWEST ... Dallas, Texas WEST COAST . . . Los Angeles, Calif.



AN AUTHORITY On Wringing Air

naturial, reclaiming is accusary. So, this DIV (Itims Boot) is environced to shoke down the robrest mist, predicite-The full scope of DeVilbins are experience over more than Equipment that is performing such operations as the mass preduction painting of please, het doping of wing febsir for service tools, constalling the flow of fluid mass-What DeVilbers are expense one means to you can be found code negrations like your news.





designs, specifications, and photographs on these products are contained in our new Avistion Catalog. SAVE MONEY SAVE EFFORT





THE PHYSIAISS COMPANY : TOLERO L. OHIO DE VILBISS Spray Systems

CREAT CAMBREST . EVELUE CYCTERS . AIR CAMBRESCARS . MASS & CAMBETTANG

# SAFETY...



Our Toronto Warrachine Stolic (S.)

UNBRAKO INTERNAL WRENCHING LOCK NUT For presery connections in sircraft, the "UNDALKO" approved salety trat. Two velcenteed fibre plays (Fig. 1) and again almost indefinitely before the torque talls

CYCE 40 YEARS IN SUSINESS STANDARD PRESSED STEEL CO. IDICENTONIN, PENNA, 40X 564 + BEANDHER BORGH + BETEOT + BELMARPOLS + CHICAGO + ST. LOUIS - SAM FRANCISCO LINEAR "PAR" PACKINGS .... PRODUCE A FLUID-TIGHT SEAL FROM ZERO TO PEAK PRESSURE







for bished efficiency the hydroalically estanted mechanism of this quart press must be carefully controlled at every point Linear "Fer" Postings center the proof from searce to point of application; unaffected by oil improvious to The distinctive design of Linear "Per" Peakings lessons a sempletely externation nacking. The changely formed hatween the cases get as reservoirs for introaction Linear "Per" packings are mondeclared from its composition, each far a specific of the next medern type. The consistence of Linear engineers is eventable. sample rings upon recurs?

TACORY, PHILASTERNIA DE PREMA

# YOU ASK FOR IT! By watching him draw one line, a Chief knows the extent of a drafts-

man's skill,

By drawing one line with a Typhonite
Eldorado pencil, you will know how
well-descreed is the fame of this great

drawing tool.

Eldorado offers you:

rado offers you

Smooth responsiveness
Opacity of line
Uniformity and accuracy of grading

Strong lands

These fine qualities have given
Dixon's Typhonite Eldorado first
place in the minds—and bands—of

. . . .

Just fill in and mail the coupon below.

A sample will convince you that you should ask for it for your work.

## FLDORADO

Pencil Sales Dept. 41.Jt1 Joseph Dixon Crucible Co., Jessey Gry 3, N. J.

Greateners
Please send me a free "Companion Sample"

News.



have the lowest contact drop, frietis not less and contactons consistent

exception, certificate and material excepts.

year ecorence of mentions off-

able for collaboration, Ehronoure, particleing to NOSSAMIT Number or Corbon Searchity facilities, will

Long briend City, New York,

# Get the Jump on <u>Nerve</u> <u>Trouble</u>





#### Use KLIXON Aircraft Circuit Breakers

Core 135 galles of descripted devents up a lighter , and all septimes may be endeagared by shorts or core basis on such as the septimes may be indisagared by shorts or core basis quantity be sentenced translations and by instelling. Edition Goods Sections. Compact, lightermath Extens Decode Sections and by instelling, Edition Goods Sections. Compact, lightermath Extens Decode promptly for soft or advantage of the section o

emeliada.

Klitica Admirekt Greekt Breeders are profitable in all 1770 - . . . . eventh, prohyect, reduceting, restauration core, results organic and sithers: Each operation single and necessarily in all reagon of chilarile organization of the purchase of meaning. They are highly energials to purchase of meaning. They are highly energials to display, wherevor, and partner. New to healers and



SPENCER THERMOSTAT COMPA



A TINY light dishes, immediately, a resolve machine starts operating. One little tube supplies the his of working continuously, without strain, To eive the precise, instantaneous action accusary for must be designed for the specific application - and all

problems which arise with arranal applications-by each design is right. An assurance of greater baltude 340 Michigan Avenue, Loganaport, Indiana





## RESSTITE Sealing Compounds

Extensively Used in Boeing's Giant B-29 Bombers

 $\mathcal{H}_{\mathrm{osc}}$  acctions, Panigha endouses and gan turrets are scaled with Pressite No. 23222 Synthetic Class Extraded Taps. It is also most between waveley many fluores and window mones of the 9-29. Various boles and elets in the presupped cubes, watertight compartments, and the vapor seal in the wings are scaled with Presente Type SH 30 Thicked Scaler, Presentes Type 11545 Bresh-On Cubin Sealer seals the giveted seams in presummed sections. Industry is only one countrie of Presents's shifty to develop or continu compounds, send your requirements to scaling specialism



powerfully for the fewark beliefty:

Integral Fael Tanks

Inspiring Desirabe Metals

Factor Beligned in belieby:

Sesphan Ploate

For the Bulliture bedrates

Possible will sladly work with you and your narioners in surrentany the most effective compounds to meet your porticular needs. In the Shadeshing Industry. Special Adhesives and

Extraded Canthies Our Engineering, Tech Scalery for Jeleting

PRESSTITE ENGINEERING CO., 3910 Chaptean Avenue, St. Louis 10, Mo.





of Confoc fasterers. One of these is the shed

Worth these pages for the other nine receess. seed to self your needs. Write for cofelog.





#### SINGLE-UNITED NATIONS' FLYERS are using it for SAFER LANDINGS

RELEASE" Harness

A one-hand turn and a tap on the single frontal disk instendly releases the harness . . . leaving the flyer entirely free, Accidental release is impossible before disk is "set" for action, now the Irvin "Simple, Release " barness to IRVIN, as always, leads in Safery,



IBVING AIR CHUTE CO., Inc. Male Cillery 1878 dellerson Ave., Bellele S. N. Y.

MOBE SOND

ALTAZION Number, 1944

### For "TOP-NOTCH" welding supplies specily (TREO) materials!

popular favorites for welding of aircraft parts, ligs, etc.

Airce No. 4 High Tensile Steel Rod A high test rod that produces welds of high physical properties. Available to U16", 2/52", 1/8", 2/16", and 1/6" Airce No. 25 Drewn Aluminum Red

Head for welcome absents of the excernor alterations allow Jenus for weaching scores to the common sententian emp-compositions, Medo in 1/16", 1/2", 1/8", 3/16", and 1/4" Airco No. 26 Drewn Sillcon-Aluminum Rod Made of \$75 silecte and \$975 silectories, for welding

alteraryan and alloce-alterations alloy products, it is particularly adaptable for molding abstraction regardless of consecution where perus are held nghely in juga. Available to 1/16", 2/22", 1/8", 2/16", and 1/6" sizes-Napoliten Sheet Aluminum Plux Superior, economical flux for welding about absenture

and one abanisons. Make at right heat for ideal flow-

#### Save buying time-use AIRCO'S illustrated price list, of gas and arc welding supplies

serve and thereing details. Mail and are welding reed. Rods fluxes Electrodes, indicate research for

\* BUT SHITTS STATES WAS BOOKS. \* ATR REDUCTION

slower and many other weighter

In Team Highest Alon Son Products So - Second Offices Hueston I, To



## Leep Your Plant's Quota "OUT FRONT!"

Victory depends upon materiols-are well as meal To keep our American forces "closing in" overseon. you and every other manufacturer here at home rest keen on making "Out Front" War flood Quatral This means action your on every point in the fighting S. Snick Place to step on Powerd Deductions for instones, hour you a 4th War been Bond Cormittee. representing labor, reprogement and other important groups in your company? Selected Team Captains

wherass? If so, hove you instructed from in sales proradam-and alone each Victory & Point Plan secures your plant meeting on the Trepsury Bookist, Getting the Order? How about Wor Bood auc-

abilities is vital, tool Have you appointed enough "self-starters" to arrange railies, competitive progress bogots and meeting schedules? Are personal piedos, order or authorization cords printed, and for respicitation near the end of the drive? Your space is all your requier advertises made to tell Your positive Yes to off points in this forward-to-

"Out front" Quoto in the 6th War Loan-and speeds the day of seconditional surrender! The Tengury Department acharolydos soci-

## AVIATION

of Treasury Department and Wor Adventure Council.



Marina production lines fully usoled and margned by experienced Mara is known as "the answer to an arrive a prayer!" Ten Green L. Manner Courses





Boot (patented Manger Space Severs not only accesses stemps capacity but the simplify honger "trelle." Ships are resulty leaded by use of many her. wifers from a state or space. The standard ships one constrain on states or space. The standard ships one conplately stoble, quickly moved into position for delivery lookuge on ships with wing tooks—other types involve no brokunge probleme. Scott Hangar Space Screen connumber with 122ps publishering costers. Can be used on all types of personal pictuals. Prempt delivery from your Scott destributes.





"school" for the edvancement of industry. In this, "Peck Service" has benefited unusually well because of its three years of unremitting production of high grade springs and screw machine parts to Government specifications. In planning your pastwar pregram, we ask that you also this cornect considera-

tion; and if in the meantime we can be of benefit to you in loving out your preducts, our engineers will be alod of the appartunity to help you.

THE PECK SPRING CO., 20 SUMMIT ST., PLAINVILLE, CONN.

### Have you thought enough about Cranes?





keens costs down by muchanixing and speeding the flow of materials-should first of all be few ible spough to insure the handling of all loads speedily, without waste. That is why Elwell-Parker hailds Electric Mobile Cranes as well as Electric Trucks of many types. Parting Elwell-Perker Crapes on your "hook" jobs may prove the mesus of eliminating present wastes and closing time-consuming gaps in the flow of your materials

can bridge a Costly Gap in your Transportation Flow The Unit illustrated has telescoping beam urion system—the one that for high lifts and will handle loads up to 3,000 pounds. You will be agreeably surreised to find how many plant and warehouse jobs it will efficiently take over for you.

> The E-P Man-your long-experienced, yessuffe Transportation Advisor-will gladly help you to survey the peed for Crancs in your plant. It will pay you to contact him. Diel Mr F.P Mee sufer.

The Flwell Parker Electric Company, 4125 Sr. Clair Avenue, Cleveland 14, Ohio.

Elwell-Parker POWER INDUSTRIAL TRUCKS

#### ELECTRICITY TO MEET AVIATION

AND AIRCRAFT INDUSTRY SOMES NEEDS ONAN ELECTRIC GENER ATING PLANTS record





Expely prises for closer energency . ..

Alex Busces Are. In leah It, Me RALDOR GRINDER





Widden Paren Enriquent Aprile year inquiries on problems involving ACCURATE METERING or SMALL VOLUMES or



BALDOR

Mark GRINDERS

for HEAVY-BUTY Service

ull by Moles Servicias

PRECISION

DOWEL PINS

STANSARD AND















ENLARGED FORGING FACILITIES Expansion of our forging facilities now al-

lows us to produce more and larger forgings to your specifications. We can offer almost immediate delivery of parts forced of steel. stainless steel, brass and monel meral. Another outstanding Arcturus feature -

our complete machine shop, combined with our colarged force plant, enables you to have your foreines machined complete - a bir saving in time and transportation cost.

May we help you with your present and peace-time foreign problems? Address your inquiries to



Archere structurel spendinations will for a multitude of sipe and

RENDING IS OUR BUSINESS SWAN ENGINFERING COMPANY





M-GRATH ST PAUL CO.

Here's your new core of your. Mr. Spithers-and Die carrellol.



B-H AIRCRAFT CO., Inc. ONG SLAND CITY I. N. Y.



The excellence in desire and in our Tabeler Microspores in the result of over thirty years of Yumira Mirrometers color the world wide acceptance of dis-

PROMPT DELIVERYS Tobular Micromotor Company ATTATION. Named on 1864

GINEERING LOK-SKRÜ Blind or Visible RIVET OR ANCHOR NUT 1 Drill ONF Hole

2 Invest LOX-SKEE

3 Riveted securely by drawing sleeve anningt inner side at metal with special nower or hand tool.

& Attachment fostened by scraw locked in anchar nut. assembled total with sever for attention

1101 S. Hiswer St CHYTIANE GOOD 105 AMOUNT, CALIF.

FASTENERS



FOR INSULATING wives, cables and electrical equipment . FOR PROTECTING electrical warms and provide acids, effective, or meeting......................... FOR SPLICING cubics with a consisseed, presective coverage .... FOR COVERING exposed papers, in chamical plants, equipment exposed to mostture or severe strate-

These widely described applications of HIRRON TAPE No. I up made rosoble by so openhancion of ounceding element, physical, and chemical properties, (See adjacent panel.) This ficable, ela-

leafly and highly resigned to sale, scale, climber, moreover, and normal variations in propertions FIREON TAPE is a new sublistion to the aloudy expense line of Economo products. It is offered

OFFICE PROPERTY. AUTHOR THREE NA 1

ONETON VARNISH AND INSULATOR COMPANY

INVINOTON Shitsipal Incin avian



ATMENDANCE SCHOOLS

Cut Drving Time To a Fraction with NALCO Infra-RedRay

Drying Equipment and Lampa SCREWS shapes, shandard and tract sed segmented arrow mariables aredillos made, econore-

FRAMINGHAM, MASSACHUSETTS

OO THAT DISTORT VACISHA HORDS

Salves the Problem of Mailing List Maintenance!



AVEATION, Number, 1944

As a bell-buoy warns of DANGER AHEAD



aircraft engine wear! Innealise excise falses is also for phare remediately call attractor to this hadden



IT WILL PAY YOU TO LET US ...

1. CHECK Your FELT Specifications

> Today a check on Ech months word leads to inservement in many nephratony. Reperformance - out costs -- expedite port-wer to do the job most efficiently and con-

2. SET UP Your Standard Sample FELT File

> Specifications are best understood when specification Felt anguales, as well as written apprishentions about the on the tensors Engineering Department, Service Offices, picto list of the Folta you me, and tell us and we shall be glad to make these conregions files on for you.

### American Felt Company

New McGraw-Hill Aviation

Rooks ESSENTIALS OF AFRIAL SURVEYING Resident Alleren Select of Assist Serveying and Rute Inhornelellas.

207 pages, 5 x 7%, 212 (Sustrations: \$3.66 DEF pages, 5 x 7%, 220 Intervalent. 53.00 migration in the second of the

By TAURIST ASSAULT

GENERAL METEOROLOGY Se HORAGE R. RYSES

Professor of Statements, Sichwelly of Cithoson,

AIR NAYIGATION MADE EASY

Griffiths-MATHEMATICS FOR AIRCRAFT ENGINE MECHANICS

344 menes, 570 x 570, 117 Electrofican, 42.52 at roady reason look which gives you a shrough und

C Already-Stational of Asset Serving and Picts Sensors



# WHEELS THAT LEND WINGS!













AVIATION Normber, 1884



#### ONLY A Dearle LIGHT GIVES THE EXTRA 60°

The safety force is high- ore, its possess discussed which the indicates on be on EXTENSION OF STREET

one halte. Write or wice for Other exclusives with Sende full denils.







SPRINGS ...

Must Be "Educated"

For Their Job . . .

not only been perbon in contest with commutator, but also preserve a definite gradient, applying its force within

shoise of proper meterial, such as beryllism copper or other cooper ellows for certain functions, is of first impor-

riels is a subject for engineering analysis. For susmale, when carines are to be used in elecsolders the east resided between effected

shack or store energy, or exert force. This they must do accurately. Thus a good heady surject must



on world-wide cirways

MANHATTAN Technocusas une evadable for con-

mileton with armost proporers. Made for infor-

MANHATTAM PRODUCTS BUILD IN PASSICATION

Terr sheed with AMMONTHS

# MANNATTAN PURPLE MES



CHARACTERSTICS

factory performance, engineer and manufacturer must Reliable is equipped to give you the correct spring for Submit were string needs to us. Reliable cetalog 64 supplied on request. THE RELIABLE SPRING & WIRE FORMS CO. Chrystend 1 Ohio

Barrentellow is Ricelos Cities

threat weakers, erwl flep beerings, Tenally Nobil Secured ment bessings.

ATTATION, Neverber, 1944

#### WEAPON FOR PRODUCTION

TUTHILL SMALL PUMPS DO BIG JOBS ON THE PRODUCTION LINE



FUMPS for hydrostic PUMPS for Indercation PUMPS for feel delivery PUMPS for Legisl PUMPS for regions

CATHER PURPL HAS MADING Army & House & All Fairs TUTHILL PUMP COMPANY





TAYLOR PLASTICS TO TOKYO

via Boeing's B-29 Superfortress Newton parts of the world's fastest and large

nol Fibro and Taylor Valcanned Fibro . . . . nated Photos should be relected for the of the aircraft industry collaborated in its teen Taylor products were selected because available seasonal

Our experience in case days I assessed Plantics for the Superfortrees and other newworths American Ephton; places enables our Mospetiet store and make helpful, intelligent obligation - were

TAYLOR FIRRE COMPANY LAWISTER PLASTICS reven many a viccasion many Servicture, Pennsylvania + Selice in Principal Sities Parth Gost Hastmarton 1988 for Patricks Lee Areales



GENERAL CONTROLS

Direct Mail

With second in a position e Write the Generalise GOVED, NELSON CO.

EXPERIMENTAL





PRODUCTO



AIRCRAFT TURNBUCKLES AN' STANDARDS analytics methods reings in critical material



WAITING FOR THE SHIFT Like every other long emblished encodarages. Diefendeel is writing

for the word . . . she word that will room with Y.F. Day ... "Connent". 

thinking now of the graving prob-



HOW TO HANDLE

VIATION ENGINES

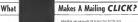






Let us know so that we can keen conies of Aviation coming recomptly

014 ACD-114



McGrow-1000 Mailing Unit, used for landing reconfestorers and Indon-New names are added in some blotherwittl for daily. Ust molden new names are added in every blotterwith but dolly. Ust middent are mide as a beauty-faut loar bank. And all nonce are questioned acquisits wiftle fee nor cart. is view of present day difficulties in maintening year over maling not, we recent presented under is patientely imported in saturing the emperitualise model covaring pay and told with As for more detailed information today. York probably he not plead at the law second cost and the total effectiveness of these

McGraw-Hill Publishing Co., Inc. 220 Wast 42nd Street New York, 12, N. Y.

Changed

diefendorf GEARS

DISPUSSOR SEAS COSP. SYRACUSE, N. Y.

\$.....



## DYKEM STEEL BLUE

making dies & templetes THE EVERY COMPANY, DISPARANCE THE ST. 24, Look & Mr.



ANY SHAPE-ANY MATERIAL COMPLETE FACILITIES While purpy for Solohit Fernings Date British J. M. WILLIAMS & CO., "Jon Strap Fraging French" Bellele, N.Y.



A763 firm Moor Aco., Chicago 31, Black

#### WHERE TO BUY NEW EQUIPMENT -- ACCESSORIES -- MATERIALS -- SUPPLIE

PLASTICLEAR CLEANER clean and polytes of open of oten picture, such as Plenighes, Sanon, assume assume present for, long, and recoming over foreign temper from authors, and provide an advanced to the clean polytes and plening and the princip makes Abs Choice polythes and plening and makes of the clean polythes and plening and authors and authors and makes of the clean polythes and are also assumed and are until as a such as readable provides an other polythesis. PLASTICLEAR SUPER-HARD WAX







consult us for design and Captum boils with many production produces GOULD STORAGE PATTERY CORPORATION . DEPEW, NEW YORK t's a permanent part of our aging routing COMTORPLUC



as impreese.



Wall Map or

with the

#### FITZGERALD GASKETS

FOR AIRCRAFT ENGINES

Write for information

THE FITTERPAIN MANUFACTURING COMPANY BEANCHES CHICAGO AND LOS ANGELES CANADIAN PITZGGGALD, LTD., TORONTO

#### FITZGERALD GASKETS

Quality reproduction—that's the Electro-Copylin. Class

HUNTER Electro-COPYIST

to those manded show Only the Elever-Crause offers a small contables to units especially

HUNTER ELECTRO-COPYIST, INC.

480 S. Warren St. Syreque 2, N. Y.

ATLATION, November, 1866

#### PRODUCTION PHICINEED WANTED Tool designer with tool plensing shifty. Canable of

setting up a Production Fo.

ginesting section of Small

Aircraft Plant, including

menufecturing methods.

procedures end routing sys-

tems, 25 to 35 years of age.

PHOT WANTED

while is evidently the publicituding of or

STEP PLANTS TREATED AND TARTE POP MALE TRANSPORT WARREST SPECIAL SWINGER OF SPEC-TRANSPORT FREE NAME OF SPECIAL PROPERTY. RATE URBOTANIO II cents a ward, whilese SIM District World II; the attlestoned rate for speaker press or 5 words | district H N S per test. Opening non-separate me rand Evil Critiston, 270,

Address ASADON "Country", 800 W. ded. 27. Sep Sep. N. 7 MDM' ADVENTISEMENTS consisted by Neumakov 20% will appear in the Demander base within

AVIATION'S MARKET PLACE

WANTER PROJECT ENGINEER

POSITIONS VACANT

POSITIONS WANTED ACCRECATIONAL PROPERTY OF STREET

swins desired and all other productions that the party with W.S.C. Sanctions COLLINS RADIO COMPANY ERESIDONO. Aircraft Men Wanted

DESIGNERS LAYOUT MEN DRAWING CHECKER with abureft menicontless executions AND DESCRIPTION OF THE PARTY OF

P.M. Abido

P-80, AVECTOR TO COLUMN 11 TO MAINTENANCE ENGINEER AND DESIGN ENGINEED FOR AIRCRAFT GEARING

Paranto-Capyrights-Frade-Marks

PROPERTY AND A SECOND SECTION OF LANCASTIN, ALLWINS & EQUINS Resistanced Patent Attenness Stable - General Information Corporing Investigate S. Falentin' and The Information per's Seri stilligation

DESIGN ENGINEER

neer. Design end drafting ability necessary, interest and knowledge in light eircreft, structures, power plents or hydreulics end electronics desirable. Apply

SALES ENGINEER WANTED BY

Southern Cellfornia light eircreft firm. A good engineer with executive ebility desireble. Should be eble to formulate a market research plan and on narine a sales processor for light eircraft and eircreft products, 25 to 35

years of eps.

AVIATION'S MARKET PLACE New Dand Bookseise

Thurs's Added Profes for AIRPORT OPERATORS SMYDED AIR/DAST MATERIAL CHECAGO

ANODIZING OF ALUMINUM PLATING Polis - Pe DEGAL NOTHER

Marrie Sc. v Notary States to and it of the States 

Seems to and enhancing below on the 18th day of

NAME OF TAXABLE

AERO TRADEC EXPERIMENTAL WORK MODIFICATIONS Specialists in Menufacturers of Wood & Metel Airplane Farts Government Asserted Station 115

WANTED TO BUY despited in Water 64 plant class or smell HARRY BRANCO IN N. N. Y. WANTED AIRPLANE Will Pay Good Cask Price For Ercorpe. Centest R. L. NULL

ENCYCLOPEDIC A new Easterhoused's Avieties Steller.

of other words defined in TWEST'S Price only 50.05 posteroid or C.O.D. Calculat Air Mexication Training AND ADDRESS OF PERSONS AND COMMAND PROPERTY PROP Benga Forms on address on white the plan is a street, Total or military clotte manufacture? To a street, Total or military clotte manufacture?

PAN AMERICAN NAVIGATION SERVICE DEPT.-M 12521 Yestura Style, M. Helbyward, Colff. LUCITE OR PLEXIGLAS

LOUBLING PRINCIPLE MAN. CO.

Caripment

For Belone of Lord See and All

AVIATION SCHOOLS

AFRONAUTICA FNGINEERING DEDREE IN 27 HORTHS

INDIANA TECHNICAL PROPERTY

1139 Spring St., M.W., Affente, Ge. Appreced Repair Station 188. NEW - SSED - ALL TIPES - SALES - MEMAIN - INSTALLATION - COMPLETE STOCK STANDARD AIRCRAFT EQUIPMENT COMPANY





DRIVING SPEED AS MUCH AS 50%

... IT'S PHILLIPS

THE ENGINEERED RECESS

Biggin as your command it can of the most prince and efficient waspens

for specifing up mentally and casting costs that you could hope in find. It's Pfillips'— On the Injuscent Recomed Head for all knafe of antwes. It's the server recent that elimination fractions, model angueous skich — the transfer shar have long made across defining size, whereand— and correct the have long made across devining size, whereand— and control first produce the necessary of the screw recent that makes delving assiss for weekers—halps knep them; profits or so proud through a shall skill.

then parts are specied through a little and peror deline for manual members are peror deliverable and peror deline for manual members are peror deliverable.

Hardwind of plans have according to species and the second hardwind a species and the second hardwind a species and the second hardwind a species and purity are you've a second hard serves a species and purity are you've and you for the laws are ready to the laws and the period of the period period of the period period of the period period

TO MAKE WARRING OFFICE

2 PHILLIPS PART CUDENC

And the Control of th

WE'VE BEEN ASKED THIS ABOUT MAGNISIUM

# Is magnesium well adapted to die casting?

Sound, strony die centinge of the highest quality are produced from Deversell Magnessen Albry: The observinges of the easier plochaftane, contained with the high strengthveight ratio of magnesium alloys, make possible products which are streng, higher in weight, yet composible in case with dis cruitaria; is clear selection.



The surface limit of Downstol dis contings is enrellest...
thinner sections are possible than with send or permanent
mold centings..., occursing and above dimensional polecanons reduce mechaning to a reinforce. Downstol's
low coal in Surpe-cus production in liberous on important

The sweet harder wheel is a one of the many sidences who I remarks the tasker property have proved switcombay.

Race 1315 Dow has been producing, alloying and districting magnessium. The breads of the occumulated knowledge, or well or the facilities of Dow's own interfering along an enodity carefulble to those tate sented in Downsteil de conting or an mean of unproving their products fragments one welcome.

# DOWMETAL magnesium

THE METAL OF MOTION

MAGNESUM DIVISION - THE DOW CHEMICAL CONFANY
MELAN, RICHARY
NAV Lot - State - Shidabh - Nidapa - Chefari - Danit - Chep - Million - Bened - Serfraction - Service - Serfraction - Serfraction - Service - Serfraction - Serfractio



Specifications for long-range aircraft call for the installation of the Pioncer Gyro Flux Gate Compass System because its master direction-indicator readings are steady and accurate in steep dives, fast turns, rough weather, or near the earth's poles. The Gyro

Flux Gate Compass is a product of a great Creative Engineering team—a contribution of Pioncer's combined skills in mechanics, electro-mechanics, electro-magneties, and electronies, . . . Month by month, as flying becomes safer, Pioncer points the way.

ONEER INSTRUMENTS

## Classes. Over Bug Gate on bedwards of braids. Adviden Corporation

## Theorem Over Bug Gate on bedwards of braids. Adviden Corporation

## Theorem Over Bug Gate on bedwards of braids. Adviden Corporation

## Theorem Over Bug Gate on bedwards of braids. Adviden Corporation

## Theorem Over Bug Gate on bedwards of braids. Adviden Corporation